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MENTAL HYGIENE AND HABITS OF THINKING

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The association of mental processes referred to long ago by Zanotti (2, p. 225) as comparable to the law of gravitation in the physical world, furnishes the one great means of integrating the personality. The association of stimuli, the association of perceptions, images, ideas, mental attitudes, motor images, will impulses, and, as some believe, affective states, and emotional reactions, this universal function of association is the means of binding together the disparate and individual mental presentations or *Vorstellungen*, as the Germans call them, and the often equally diverse if not equally distinct mental attitudes and determining tendencies, what the Germans call *Einstellungen*.

This same process of association, which makes possible the integration of the concrete, individual and diverse units of mental experience, affords the means of forming groups of mental states, the association masses of the Herbartians, the association complexes of the Freudians, the association constellations, or association hierarchies, or what not, of various psychologists, which in turn furnish the danger of dissociated personalities, disintegration, and the variety of abnormal and anti-social developments which divide and split up the normal self in a multitude of ways shown most clearly and disastrously in certain extreme pathological conditions, notably *Schizophrenia*, the distinguishing characteristic of most cases of *dementia praecox* so called.

Thus the study of this most universal and most familiar of all the mental processes is of the greatest importance both for the education and the mental health of the individual.

Woodworth (15, p. 401-2) considers the conditioned reflex in connection with the general laws of association. "The

explanation of all instances of conditioned reflex," as he points out, "is the same. We have an effective stimulus acting, i. e., a stimulus strongly linked with the response; and we also have acting an ineffective stimulus, which gets drawn into the same reaction. The effective stimulus determines what response shall be made, and the other stimulus finds an outlet into that response, being, as it seems, attracted towards the activated response, sucked into it. The weak linkage from the ineffective stimulus to the response, being thus used and strengthened, later enables this stimulus to arouse the response single-handed."

The relations and significance of association in all processes of learning are well recognized. They are equally important in all matters relating to the mental health of the individual, in all of the great classes of mental phenomena, in the association of stimuli, the association of ideas, mental attitudes, and emotional states, and the like, and finally in the association of responses.

The Law of Association and Mental Hygiene

"The phenomenon of association appears almost at the very outset of experience. The primitive shocks or tremors coalesce and form definite sensations which are the first actual experiences of the conscious individual. Sensations, in turn, combine into simultaneous groups (percepts) and into sequences. The resulting groups combine into higher complexes and trains of thought. Thus the associative process runs through the whole gamut of mentality."

This statement by Dr. Warren (13), in his excellent history of the theories and facts in regard to association, shows the fundamental character of this process in the mental life. From the days of Aristotle (2), psychologists have had a more or less vague idea that all mental states are subject to the law of association. Hartley accepted this view fully and explicitly. According to him all mental phenomena are associated. The physiological correlative of this is the fact that when two brain cells are excited simultaneously they become associated. According to Hartley not only sensations and ideas, but also motions and feelings become associated. We may borrow Warren's summary (13) as follows: "A sensation or an idea (or, Hartley adds, a muscular movement) is able to induce another idea or another muscular movement, provided the latter term of the sequence has in the past occurred frequently in conjunction with the former term."

In recent times, as indicated by Warren's study, approx-

imately Hartley's view has gained in favor, so that today it may be said that apparently some psychologists hold that not only sensations and ideas and motor processes are associated, but that the associative process applies also to mental attitudes, affective experiences, and the like.

Warren presents the standpoint of the orthodox association school as follows (13):

"The typical standpoint of the association school would seem to make the relation of *contiguity* dominant. (1) Sensations tend to call up their corresponding ideas; and these ideas arouse certain contiguous data—experiences or experience-elements which either coexisted with the corresponding experiences or succeeded them when they occurred previously. (2) Similarly, ideas which have been aroused through this process of association tend in their turn to arouse other ideational states or elements which coexisted with them or succeeded them in some prior experience. (3) Sensations which occur contiguously—that is, either simultaneously or in immediate sequence—tend to unite into single experiences or unbroken chains of experience. Thus the law of contiguity may be regarded as the basis of the association psychology in its attempt to explain the nature of complex experiences and account for the course taken by trains of thought."

Our conception of association has been modified in recent years, and yet this change in our conception has made it, if anything, more fundamental rather than less. The most important modification is perhaps that made by the modern viewpoint of stimulation and response. This has been expressed by Kantor as follows:

"Precisely as in the case of an earlier psychological period associational processes today may be looked upon as fundamental and universal mechanisms for all psychological phenomena. But unlike the earlier period in which association was considered as having to do only with mental states, we must today consider it as referring to the organization of actual stimuli-response situations. Associational processes, then, we may conclude constitute some of the basic facts in an objective and naturalistic psychology. We have attempted to point out that the specific reactions to stimuli such as we call learning, remembering, thinking, and the manipulation of skill are all the operations of connections between stimuli and responses. Also, psychological capacities of various sorts besides specific responses may be looked upon as the association of many responses and stimuli of some given type, all of which in their operation give the person a series of general competencies serviceable in his various adjustments."

The present condition of our knowledge from the physical side may be stated somewhat as follows: conditions of neural excitation occurring simultaneously or within certain short limits of time, tend to become associated. What are the time limits for such association, to what extent association of the different processes occur, what strength of association is necessary for revival, we do not know and must wait for experimental investigation to determine.

For the laws, theories, present views and tendencies, and the results of experimental studies, one may refer to Warren's history. Some facts significant for hygiene may be presented supplementary to the general laws of association, from the point of view of our study of the association of sensations and stimuli; and from the investigations already made by different investigators, especially in Russia, France and this country, a few general principles in regard to the association of stimuli in the development of conditioned reflexes can be formulated. The forming of associations in the mental field must naturally follow the same general laws that apply to the association of stimuli in motor or glandular conditioned reflexes. Let us note the correspondence.

(1) The principle of simultaneity. Two stimuli are associated in the brain cortex when they occur simultaneously. Thus a new stimulus can be associated with the original stimulus to form a conditioned reflex only when the new stimulus comes in while the original stimulus is active, or a little before, in which case the new stimulus does not die out before the biologically adequate one becomes active. In like manner the fundamental law of association in the mental field is the law of simultaneity. This was formulated by Aristotle and has been accepted by all psychologists since his time.

(2) Experiment and observation have shown that an association is usually formed by *repetition* of the new stimulus simultaneously with the original stimulus; or else by a single intense occurrence of the two stimuli at the same time. Or, in other words, we may say that association of stimuli is produced by repetition or by shock. The same is true of association in the mental field. While usually repetition is necessary for any permanence of association, on the other hand imperative associations are formed by the single occurrence of two ideas simultaneously if in the single instance the association is sufficiently intense. In other words, associations of ideas are formed by repetition or by shock. Or, to formulate the whole matter in different words, we could say that the necessary number of simultaneous occurrences of the two

stimuli is determined by the intensity of the association. In the case of learning of nonsense syllables, for example, many repetitions are necessary, because the associations have little or no affective quality. On the other hand, in case of certain associations a single occurrence is sufficient to form a permanent association where the association is of intense affective or emotional character.

(3) The third principle is that the associations of stimuli formed by shock or by a sufficient number of repetitions within certain limits are imperative. Neither the child nor the adult can directly avoid the automatic occurrence of the conditioned reflex when it has been established. The reaction is inevitable. In like manner the mental association of ideas, formed by shock or by repetition is imperative, as can be illustrated by familiar examples. Years ago interesting cases were given by the philosopher Locke (9).

(4) The association of stimuli in the production of conditioned reflexes may be inhibited by other stimuli, or may die out from lack of continued association or re-enforcement by the adequate stimulus; really perhaps a case of inhibition, because when a conditioned reflex dies out after a period of time without re-enforcement, it may be looked upon as really inhibited, since during any such period many other stimuli are always active. Hence Pavlov called this dying out due to lack of re-enforcement "internal inhibition," as I understand him. In like manner in the mental field associations are inhibited by the presence of other ideas, as when we cannot remember a name because other names always intrude in consciousness and inhibit the one desired. And again associations die out after a sufficient time when not recalled, chiefly perhaps because of the multitude of other ideas which are continually active in consciousness and inhibit them.

There is a gap in our knowledge of association from the fact that adequate attention has not been given to inhibitory associations. These, as already suggested, are as important perhaps for the mental life as what may be called positive associations.

(5) Again when a number of stimuli have become associated with the original stimulus in the production of conditioned reflexes, apparently there is liability to interference of association. Although this has not been worked out clearly, the phenomena of interference of stimuli in nervous reaction seem to make this probable. In the case of mental processes interference is a well-known phenomenon, and there are many illustrations, interference in the association of ideas, interference of will impulses, and interference of affective states.

(6) It should be noted that the bonds of association between stimuli and between ideas have to a certain extent a reciprocally facilitating effect. Just as the associated stimulus is re-enforced by association with the original stimulus, so after a conditioned reflex has been formed the adequate stimulus itself seems to be re-enforced and the response facilitated by the associated stimulus. Of this we have many concrete illustrations. Ornaments at the table, attractive dishes, drugs, patent medicines, suppositories, cigars, and the like, often owe their influence to this effect of the associated stimulus. In like manner the bonds of association between ideas are mutually facilitating. While the association between two words may be stronger in one direction than in the other, it is mutual. Thus the word *Fernsprecher* calls to my mind the word *telephone* more readily than the word telephone recalls *Fernsprecher*, yet the association works both ways.

Associated Responses—Woodworth, Freud, and some other psychologists, have called attention to what they call a substitute response, transferred, or associated response. Woodworth (15, p. 299) describes this as follows:

"The *substitute response* is another modification to be placed alongside of the substitute stimulus. Here a natural stimulus calls out a motor response different from its natural response. The muttered imprecation of the adult takes the place of the child's scream of pain. The loose holding of the pen between the thumb and the first two fingers takes the place of the child's full-fisted grasp." This he illustrates from the training of rats to respond to a door marked by a yellow disk (15, p. 305):

"Learning to respond to a signal might be classified under the head of substitute stimulus, since the rat learns to respond to a stimulus, the yellow disk, that at first left him unmoved. But more careful consideration shows this to be, rather, a case of substitute response. The natural reaction of a rat to a door is to enter it, not to look at its surface, but the experiment forces him to make the preliminary response of attending to the appearance of the door before entering it. The response of attending to the surface of the door is substituted for the instinctive response of entering. Otherwise put: the response of finding the marked door and entering that is substituted for the response of entering any door at random."

Some of the cases given by Pfister (10) are apparently cases of conditioned feelings. He says:

"Sometimes the repressed feeling is smuggled in to the conscious in the company of quite another image or group of images. In doing so it attaches itself to some insignificant but

characteristic detail. The repressed hatred of one person may be manifested towards someone else if the latter has by any chance any—possibly almost imperceptible—exterior traits in common with the hated person. The name, the attitude, the shape of the nose, a gesture of the hand,—any of these may not only suffice to evoke the repressed image of a hated person, but also to unchain feelings associated with this image."

Freud has rightly noted that errors and accidents are to be explained largely by interference of association or interference of will impulses. To put it in his exact words, errors are "valid psychic acts. They have their meaning, they arise through the collaboration—or better, the mutual interference, —of two different intentions."

Many illustrations of associated responses have been given by Freud. Where the natural response would be something abhorrent to the individual's character or something extremely unconventional or something contrary to the accepted code of ethics in one's community, then some other response, which is endurable by the patient, is likely to be substituted. Thus even a distinctly painful reaction may become the associated or substituted response in place of a train of thought or a course of behavior which would be natural to the given stimuli.

Commonplace illustrations illustrate the value that such substitutions of associated responses may have for the mental health of the individual. For example, if a man strikes me, I may react by a natural response and knock the man down, or I may philosophize in regard to the matter and reflect that a gentleman will not insult me and that no other person can, and this mental response may take the place of the physical response. Anything whatever in the form of an adequate mental response is just as hygienic as the physical response; the chief difficulty is that few persons are sufficiently trained and have had sufficient experience in life to substitute an adequate mental response for the native physical response; but this is always possible, and a large part of the training in ethics and mental hygiene consists in developing such associated responses for the stimuli of the emotions of fear, anger, and the like.

Simple examples are instructive. A friend has related an incident that illustrates the way in well-trained children an associated response may be substituted for the natural response. The case was that of an English boy, and it is probably true that boys in English families of the middle and higher classes are not coddled but trained to meet difficulties often better than American boys. The boy in question was calling

upon a friend and enjoying the opportunity offered to rock vigorously in a rocking chair. Finally in the exuberance of his activity he went over backward and apparently hurt himself considerably. The boy jumped up, gave no expression of pain or the like, but went over and stood by the radiator, and presently as the pain became unbearable, exclaimed vehemently: "Why do you have it so beastly hot?" This exclamation in regard to the heat seemed to serve as a surrogate for the natural expression of emotion by crying or the like.

Among the contributions of Freud to mental hygiene is what with apologies to Schopenhauer might be called his fourfold teaching in regard to normal reaction to feeling in showing, first, the need of adequate response to human impulses and feelings; second, the injury likely to result if adequate normal reaction is prevented; third, that substitute responses to feeling are possible and that anything whatever of a character fitting in the individual needs may take the place of the direct natural response and function as a surrogate; fourth, that a purely mental response in a series of associations, or, as we are wont to say in thought, may be just as adequate a response as a physical reaction.

Concrete examples might be given in abundance. The literature, however, is easily accessible; a mere statement is all that is necessary here. The educational and hygienic significance of this teaching is likewise obvious. The one thing, however, which should be especially emphasized is the fact that children from infancy should have training in response to feeling in direct natural reaction where this is legitimate; in delayed and substitute responses as the growing complexity of the child's social life makes this necessary; and finally that training in natural control of feeling by sublimation and the like which is necessary for the social and hygienic training of the individual.

As a matter of fact the educational and hygienic significance of substitute responses has long been recognized, by primitive peoples, in folk thought, and in ethical literature from earliest times. While this does not clear up the mysteries of human nature, it does help to explain many of the curious and bizarre customs and superstitions so common among primitive people. "How," asks Garveth Read (11, p. 137), "do the laws of association explain my astonishing belief that to put his image in the fire, or to thrust a thorn into his footprint, or to dig it up, carry it home and put it in the oven, will make him lame or afflict him with some wasting disease?"

Without attempting to explain the genesis of such beliefs and superstitions it is clear enough that one factor in their

development was this universal need of doing something on occasion of strong emotion; and anything whatever which in the particular situation and with regard to the traditions of the tribe seems a fitting response would be significant as the surrogate.

The pathological cases of transferred and substitute responses reported in great numbers by the psychiatrists emphasize the significance of such associated reactions for hygiene and the need of preventing the development in children of those likely to be injurious. Further illustration may be unnecessary, but parents and teachers should remember that the significance of these pathological associated responses is likely to be a deep-seated matter and to represent unwillingness to face a difficult situation. It is easy for a child to get some associated response that will serve as an excuse for avoiding disagreeable tasks. All this is so obvious that it is commonplace, but the hygienic need of prevention is put none too strongly by Dr. Barker (1, p. 247-8):

"A child should never be permitted to use invented physical symptoms or nervous symptoms to escape from its duties. Many a child learns that he can stay home from school, or from Sunday school, or from dancing school, by having a headache. Children, as well as grown-ups, are tempted to invent some excuse in the hope that they may escape duties or occupations that are a little unpleasant or irksome to them at the time. The wise parent should see to it when the child says he has a headache and is permitted to escape some normal function, or some duty, on account of it, that he does not have too good a time. Let him stay in bed with restricted diet, restricted companionship and restricted activities until the headache is better, and then if he has been fabricating his headaches he will not have them so often."

While psychologists are rightly cautious in speaking of mental stimuli and in drawing analogies between the association of ideas and the association of stimuli, in the practical matters of education and hygiene, we cannot fail to recognize the influence of ideas and associations of unfortunate character upon the behavior and the health of individuals. This was pointed out long ago by John Locke, and has been illustrated in manifold ways in all human activity and has been a commonplace in mental hygiene and commonsense education ever since his day. No one, however, saw their hygienic significance more clearly. He says (9, p. 531):

"This wrong connexion in our minds of ideas in themselves loose and independent of one another, has such an influence, and is of so great force to set us awry in our actions, as well

moral as natural, passions, reasonings, and notions themselves, that perhaps there is not any one thing that deserves more to be looked after."

We may well turn aside to consider some of the higher aspects of this whole matter, especially in the higher habits of association that we call thinking.

Habit in the Mental Field

Habit in our mental processes is of course quite as important as habit in the motor field. Even introspection shows how largely our thoughts chase each other along habitual lines, and all expression of thought, whether in oral and written language or in artistic expression in music, painting, sculpture, and the other fine arts, gives manifold illustration. Not merely are all such products for the most part conventional, mere expression of habitual thinking and customary feeling; but even the attempts at the bizarre and the unconventional, in jazz music, *vers libre*, the new dancing, and in the various forms of new art, the impressionistic, the cubist, and the rest, all these are not so much expressions of what is new and unconventional in mental processes, but merely new forms of expressing old modes of thinking and old states of feeling; and even in their most unusual and significant forms which impress us as the works of real genius, largely they consist merely of a clearer, broader and more significant expression of old long-forgotten secrets about ourselves.

All this is so well known that even to illustrate this habitual character of our thinking would be tiresome. We have only to note the talk and the behavior of our companions and the men and women we meet every day on the street. What, for example, have you seen or heard today that was not repetition of what you have heard or seen a thousand times? Even the daily paper that aims at the unusual and sensational is for the most part filled with the commonplace and conventional. The unusual things reported in the news are repetitions with slight variation of the same old situations, the same old comedies and tragedies; and the most remarkable of them largely make their appeal to us just because they concern the deep-seated familiar interests of human life and human emotion.

If one observes his own behavior and his own thinking, it appears for the most part so commonplace and conventional that one is likely to be appalled. If one makes special test of his own ability to think outside of conventional lines by trying to solve a puzzle or a problem, whether in mathematics

or economics or the business of everyday life, one finds renewed evidence of this inability to get away from narrow limits; and if one studies problems just a little beyond the margin of one's own horizon, the experience is that of coming up to a blank wall with no exit, and no clue to any solution of the mystery. Take, for example, tricks like those of Houdini. Even when one knows something of the *modus operandi* of such performance, the mind seems balked and paralyzed when it attempts to explain his mysteries; yet for the most part they depend upon a few very simple principles.

Outside of our habitual lines of thinking we are merely children, unable to think in unusual, unconventional terms, not really feebleminded, because by training we can learn to think of the unconventional and develop new associations and new habits of thought, but pseudo-feebleminded, because for the time being we seem as incapable of thought in the new fields and along new lines as a child with arrested development, the congenital imbecile.

From the days of Plato the power of reason has been extolled as the great prerogative and the crowning glory of the human mind. The ancient sophists and philosophers boasted of their ability to reason, and their schools were called thinking shops. In like manner the schools of today maintain that their aim is to teach pupils to think. Both observation and experiment, however, indicate that thinking is a rare form of mental activity. Nearly all thinking so called is a process of forming associations. We learn of something new, a new idea, a new doctrine, a new opinion or project; we say that we must think about it, and presently we accept it or reject it. In such cases if we analyze the process we are likely to find that we by no means use our reason; but the most that we do is to become familiar with it, form associations with it, and cease to be jarred by the novelty of it; our feeling in connection with it, as something strange and unconventional becomes dulled; in a word, we become at home with it, and this we call thinking. Thus the opinions we hold are apt to be not those that we have gained by reasoning but rather those with which we have become familiar. The genesis of them has been well described by Baudouin in his helpful book on "Suggestion and autosuggestion," p. 45-6.

"You hear an opinion stated; you are well aware that it is nothing more than an opinion; you have your reserves when you accept it; you intend to look into the matter more closely, to reason about it. At this stage you think the judgments that have been formulated, without believing them in the strict sense of the term. What you have in your mind are not

complete judgments, for belief is an integral part of judgment, and here belief is lacking. All that you have is what we may call the 'schema' of a judgment, the idea of a judgment (or of that series of judgments which constitutes an opinion).

"Time passes, and you no longer think about verification. You even forget the original source of your idea. But one day you are called upon to decide the question, and you discover that your mind is made up; you hold the very opinion which you heard expressed formerly, although you have never had any proof. The ordinary newspaper reader, the man-in-the-street, is continually circulating these 'hearsays,' without professing any credence in them. Nevertheless the newspaper reader's opinions are based upon the falsehoods he reads in his favourite paper."

The best illustration of this rôle of habit in the mental world is given by reflecting on one's own experience. Take your own views, for example, in regard to the political, economic and industrial problems of today. How did you get the beliefs that you hold? We often fool ourselves by imagining that we have thought about these things, but careful introspection is likely to show that our supposed thinking was merely the hearing or reading of the opinion, the opportunity to hear it again and again, and then a process of associating this new and perhaps unconventional opinion with our old and habitual opinions, and as soon as it became familiar adopting it without any analysis or real thinking about the problem whatever.

It is by making people familiar with new ideas and proposed changes that reforms are effected. Take, for example, the subject of hygiene itself. Thirty-five years ago medical inspection, school baths, adjustable seats and desks and scientific cleanliness in school rooms were the vagaries of scientific theorists. Today they are largely recognized as essentials in every good school. How was this brought about? Not to any great extent by argument and reasoning, except to some degree in the case of a few leaders, but rather by concrete example and by making people little by little familiar with the new plan. And today those who wish to bring about changes depend relatively little on reasoning, but they try to give a concrete example of the new plan and attempt widespread propaganda to make people familiar with the ideas.

While real reasoning is rare, three kinds of reasoning are common: First, the usual form where we make an emotional reaction along the line of our prejudices, opinions, beliefs or ideals, and then do a great deal of thinking in support of the emotional reaction we have made.

Any opinion, or argument, or evidence in support of our opinions or our ideals we are apt to treat with uncritical hospitality. One's attitude toward the following bit of evidence is likely to give a good illustration.

Education increases productive power

Massachusetts gave her citizens 7 years' schooling.
The United States gave her citizens 4.4 years' schooling.
Tennessee gave her citizens 3 years' schooling.

Massachusetts citizens produced per capita $260 per year.
Citizens of the United States produced per capita $170 per year.
Tennessee citizens produced per capita $116 per year.
It pays the state to educate.[1]

This seems to be pretty good evidence. It has been widely quoted apparently. But let us examine it for a moment. Other things besides education are factors in material production. Diet, for example, is an important factor.

A similar argument, if accepted for a certain kind of food, might prove too much. To illustrate:

In the year 1909 Massachusetts gave each of her citizens 7 quarts of baked beans.
Tennessee gave each of her citizens only 2 quarts of baked beans.
Massachusetts citizens produced per capita $260 per year.
Tennessee citizens produced per capita only $116 per year.
It pays the state to use baked beans.

Why does one of these arguments seem sound to us and the other absurd? It is partly because the former is familiar, the latter is not. But still more than that, we all have a general belief in the significance and efficacy of education. We have a general tendency to look favorably upon any argument that tends to support this idea of the importance of education.

A second form of thinking results from the reverse of this uncritical attitude—namely, a form of extreme criticism resulting from a hypercritical attitude.

After a student of good ability has seen some of the current fallacies and become somewhat sophisticated, a critical attitude in regard to everything may develop. The individual has learned to be on his guard, and an over-compensation occurs.

[1]The figures from this chart are for 1899 from "A World-Wide Law," by Charles W. Dabney. Similar figures of more recent date could be cited.

You cannot fool him. He can find defects in everything. Teachers often acquire this attitude, and their favorite form of reply to another's idea is "Yes and no"; "Yes, but—," or the like.

This attitude makes one ready always to criticize and to find defects in whatever is suggested by others. A vast amount of thinking, even by the best students, is of this kind. The evil of it is that this critical attitude inhibits the ability to learn. If one already knows and is able to criticize, why should he learn?

The third form of thinking is that illustrated so well in many pathological cases. The thinking of the neurasthenic in finding excuses for giving up to his feelings and pains and aches and reasons for not doing tasks that would give opportunity for the training necessary for recovery, is well known.

The patient decides that he is not able to do something, perform some duty, meet an engagement, take exercise, eat a certain kind of food or the like, and then does a vast amount of clever thinking to find excuses in support of his decisions. All of us in certain situations are apt to react in this way and show our ability in thinking up reasons for our actions.

Dr. Williams has described the way such thinking often occurs in connection with emotion (14, p. 298):

"Something," he says, "must be done with a strong emotion. It will not evaporate. It may be partially satisfied by rationalizing a cause for it, or one may rid one's self of it by assigning it to elements in the environment. Borne down by a sense of failure and inadequacy, self-respect may be maintained by finding the cause not within one's self, but in the unfairness and the unjustness and the misunderstanding of others. They and not we are to blame; self-respect is in part maintained, but at the cost of a habit that is insidious and capable of much elaboration and development."

Thus the laws of association are of universal application in the mental world, and the study of them is especially worth while in regard to our so-called thinking or reasoning. The law of habit, also, if one please to call it that, applies in the mental field as well as in the physical, complexes of associations developing in the mind, as systems of conditioned reflexes develop in the neuromuscular system.

These laws of habit and association are fundamental to the whole of educational psychology and mental hygiene. Throughout the whole subject we have to do with habits of different kinds—habits of perception, of preperception, of apperception, habits of memory and association, habits of voluntary reaction, and even habits of reasoning and of

judgment. We find also that preperception, apperception, interest and the productive imagination are names for different aspects or forms of the associative processes, and represent different degrees of complexity in the associative content.

If all this makes the subject appear simple as compared with the manifold faculties and disparate processes of the old psychology, it should be noted that this simplicity is a natural simplicity. If, on the other hand, as one proceeds to the study of the varying forms and aspects and degrees of complexity in association and sees the interrelation of the various psychological processes, finding everywhere various degrees of organization and noting that processes of facilitation, inhibition, of change, of development, organization, automatization and decay are all the time going on, if then the subject seems infinitely complex, this complexity in turn is a natural complexity.

It is not strange that our thinking is so largely a matter of mere association by contiguity. Not only have the mental measurements, the measurement of intelligence, shown alarmingly little intelligence to measure; but even those who are capable of reasoning are apt to be governed by the law of inertia and actually to do relatively little of it.

Of course it is obvious that this is only half the story. One feels instinctively that this by itself is an unfair statement. Is not right thinking possible? How may we in spite of the defects of human nature, our emotional reactions, in spite of our personal equation, and in spite of the pitfalls that always threaten human reason, how may we obtain the truth, how may we correct our reasoning and distinguish between true knowledge and error?

The answer to this is simple and definite. The method is the scientific method, which, put in its briefest and simplest form, is merely this: first-hand observation, experimentation under controlled conditions, and verification, correcting our reasoning by further observation and controlled experimentation and by reference to the facts of experience. This is the scientific method illustrated, crudely to be sure, by Aristotle and some of the ancient and mediæval students, but used in all the fields of real science for the last 100 years, the method which has built up modern science and made us sure of knowledge which can be verified.

While all this seems simple, it is really very difficult to acquire the scientific attitude and really master the scientific method. Since this is the method of scientific hygiene as well as of the other sciences, it may be well to turn aside and recall briefly the different forms of this scientific method.

Apart from the deductive method used in the mathematical sciences, four great methods have been developed in science. First, the *sic et non*, yes and no, method so called; second, the observational-inductive method; third, the experimental method; and fourth, the genetic method. Just a word may be said of each of these.

First, the *sic et non* method used more or less by all thinkers and made significant as a method for attempting to gain the truth by the great mediæval professor Abelard, consists in its best form of bringing together all the evidence on both sides of a question, on the affirmative and on the negative, and then deciding according to the balance of evidence on the one side or the other.

Second, the observational-inductive method used in imperfect form by Aristotle and other ancient thinkers, made widely known, although in confused form by Francis Bacon, and clearly defined and practised by Sir Isaac Newton, consists essentially in first-hand observation, induction from the data obtained, and verification by reference to all the facts obtainable.

The third method is the experimental method used loosely by Aristotle and some of the ancient philosophers, emphasized and practised by Roger Bacon in the thirteenth century, and used in practically all the sciences today. This consists in studying a problem by experiment under controlled conditions in the laboratory, and then in verification by further experimentation and reference to the facts of experience.

The fourth is the genetic method, used to a limited extent by the ancients, in modern times made prominent and familiar by Darwin, and shown to be significant and essential in psychology and education by G. Stanley Hall. This consists essentially in studying the facts in their genesis and wider causal relations; and in education in making the sequence of natural stages of development, both physiological and psychological in the human infant, child, and adolescent, the conditions determining the sequence of education and training.

To obtain truth today it is of course desirable to use all of these methods in all subjects as far as possible. The essentials of the scientific method may thus be summed up briefly as follows: first-hand observation and experimentation under controlled conditions; verification, and the study of concrete facts in their genesis and wider causal relations.

This scientific method enables one to think correctly and to avoid the pitfalls that beset human reasoning. Especially it enables one to control one's emotional reactions and discount properly one's personal equation.

Of course it is much easier to accept opinions by becoming familiar with them than it is to use the scientific method. It is much easier to accept beliefs on authority than it is to reason about them and to verify them. It is always difficult to gain the scientific attitude and acquire the scientific method. It comes usually only by extended training; and even then since the training is inevitably in a limited field, usually in a relatively narrow specialty, we often find distinguished scientists, men who use the scientific method rigorously in their own subject who are unable to use this method and to think correctly in other fields. Noteworthy cases are those of Crooks the great chemist, Wallace the great biologist, and other more recent scientists who have done excellent work in their own fields but fallen into grievous error when they attempted to reason outside their own fields, in the subject of psychology or the like. Unfortunately the scientific attitude seldom transfers. It is only by special training, or perhaps in the case of men of unusual ability, that it is possible for students to transfer their scientific attitude and use the scientific method in a subject where they are not trained and not familiar with the facts.

It should be noted that it is familiarity with opinions that is apt to lead us astray, since we are apt to accept them according to the sets of our mind or the determining tendencies of our minds, and because they harmonize with our already accepted beliefs and ideals. On the other hand, familiarity with facts is likely to be a safeguard against error, and the wider our range of knowledge of facts the better prepared we are for correcting our thinking by reference to experience.

A good illustration of this is one's reaction to the grotesque political speech on the 8-hour day by Jeff in Bud Fisher's series Mutt and Jeff. Apropos of the 8-hour law, Jeff argues to the laboring men as follows:

"Fellow workers, do you realize actually how little time you really work for your employer under the 8-hour law? *Very little* as figures will show. For example, there are 365 days in a year. You spend 16 hours each day in recreation or sleep. This amounts to 244 days and leaves but 121 days. Sundays you do not work which takes off 52 days, so there is left but 69 days. Every Saturday you have a half day off which deducts 26 days, leaving but 43 days. Lunch hours amount to 16 days, which brings the figures to 27 days. Two weeks' vacation each year deducts 14 days, which leaves 13 days. Legal holidays number 12 days, which shows you actually work but *one* day each year, and if you are sick at all you owe the Company money."

The fallacy due to the indiscriminate use of the word day with its two meanings, is obvious, because in this particular instance we easily correct the false reasoning by reference to our everyday experience. There is, however, a considerable amount of reasoning of this sort where the facts of experience are not so familiar that not only misleads the usual audience, but often apparently the speaker as well.

Even in psychology and pedagogy such false reasoning is not unknown, and where we are unfamiliar with the facts and a word that has two different meanings we are liable to be misled according to our partisan prejudices. Take the following statement for illustration:

"Herbart and some other educators have maintained that the aim of education is the development of permanent interests. These same educators usually maintain also that the only way to educate and instruct children properly is by appeal to interest and by basing all the work on the interest of the pupil. It is bad enough to appeal always to the interest of children instead of enforcing the sterner discipline of effort; it is bad enough to make interest the means and motive in education; but to go farther and make interest the aim and end of education is to ensure a brood of spineless students."

All this sounds fairly plausible and one would hardly be rash to predict that such an argument would be readily accepted by most of the extreme partisans of the so-called effort theory in education and who boast that they are enemies of soft pedagogy. But whatever the merits of this classic controversy between the so-called interest school and the effort school, this particular argument is a Mutt and Jeff argument. The fallacy in both is due to the indiscriminate use of a word which has two different meanings, the word *day* in the one case and the word *interest* in the other. The fallacy in such an educational argument is obvious when we reflect on the two meanings of the word interest, namely, interest as an affective state, a state of feeling, the concomitant of attention; and interest as an attitude and a habit of preperception, as when we say that one has an interest in art or literature or the like, meaning that he has many associations connected with the given subject and habits of preperception for whatever concerns the subject. Probably a great part of the psychological text-books contain passages illustrating confusion in the use of the word interest on account of these two different meanings.

We have plenty of such fallacies in everyday life, in politics, and education. Most teachers and school officials are handicapped because they have a narrow range of knowledge of the

significant facts relating to child development and of other facts pertinent to the great problems of education and mental hygiene.

Recent investigations have shown that an important factor in conditioning right reasoning is just this familiarity with the material. The reason for this is probably in part at least that with familiar material we can easily correct our thinking by reference to the facts of experience. With unfamiliar material it is difficult to do this. A great part of the advantage of prolonged study of an important subject comes precisely from this fact. By continued study we become familiar with the significant facts; hence the great advantage of studying a subject from different points of view, from reading different books on the same subject, from taking different courses of instruction in the same field, and especially from laboratory work, where again and again one has to deal with the elementary and essential elements of any subject.

Familiarity, however, without the scientific method, may not save us. For example, three things are familiar and sacred to most men; first, one's own country; second, one's own child; third, one's own idea. For these one's emotional reaction is likely to be so strong that it is difficult to use one's reason normally.

As regards the first of these, one's feelings toward one's own country, we have had most noteworthy evidence within the last few years of the way patriotism and the emotional reactions connected with whatever pertains to one's own country may inhibit the power of normal reasoning.

Second, is the case of one's own child. One's devotion to one's own child and one's inability to see faults in one's own are proverbial. Every teacher and every physician knows this. Many illustrations might be given. Personally I know a psychologist who for a long time, two or three years, if I mistake not, could not find out the trouble with his own child, went to physician after physician until finally one discovered that the child was suffering from an adenoid. The psychologist was acquainted with such defects, would very likely have recognized the trouble in case of another child, but here he and his wife were blind in regard to their own child. Especially is this so in regard to faults.

Third, is the case of one's own idea. How pathetically fond we are of our own intellectual children, how difficult it is for us to sacrifice them, everybody knows. It has always been so and is as true today as it was 600 years ago when Roger Bacon recognized as one of the chief sources of human

error our own assumption of knowledge and the way we fool ourselves by our love for our own opinions.

All this is important in mental hygiene for two reasons, first because hygiene today adopts the scientific method and hence is building up a solid body of scientific truth. While scientific hygiene is slow and cautious and does not readily follow the many voices that cry "Lo here, or lo there, is the kingdom of health"; and while it hesitates to publish hygienic teaching prematurely; it has full confidence in any doctrines established by the scientific method because these can be verified by any one who is competent and has the necessary apparatus.

The second reason for calling attention to this is the fact that one of the best possible forms of healthful mental gymnastics and one of the best means of developing integration of the personality is the use of the scientific method and the habit of reasoning with constant control by reference to the facts of experience.

The great practical movement in hygiene today is one of actual training of the individual child. The various child health organizations associated with the National Child Health Council (18), all emphasize the need of training children in habits of health in the early years, and have established codes of rules for the simple and essential habits such as those relating to food, sleep, drinking ample amounts of water, cleanliness, and the like. Health habits in the mental field are of course equally important; and while the essential habits of mental health in concrete form are many, the one great generic health habit is that of facing reality and attentive thinking in the use of the scientific method.

From our present point of view it is clear that no task can be so valuable for integrating the personality and conserving the mental health as one that gives constant training in the use of the scientific method. The higher schools and colleges offer the great opportunity for such training. Those who profit by this opportunity acquire the best protection against those childish emotional reactions and attitudes, such as suspicion, fear, envy, jealousy and that sentimentalism that attempts to substitute a world of things as one would like to have them for the world of things as they are; and it provides also the means of correcting and controlling one's personal equation in those subjects where one lacks special training.

This higher scientific training and the scientific attitude do not come from the study of any particular subject, or from any particular occupation, but by the use of the scientific method in whatever subject one is concerned with. It is

obvious that all should have this training; and hence in all subjects, from the elementary school up, the scientific method should be used as far as possible. This is possible in each subject of the curriculum. All that is needed is to have suitable methods developed. Even in the simple problems in arithmetic the habit of correcting the major premise by reference to the facts of experience may be developed; everywhere the emphasis can be placed upon the real facts with which one is concerned, and, in all the work and discipline of the school, children can be trained to see that their own feelings have nothing to do with the facts.

Here education and mental hygiene unite; for the scientific method is as essential for the one as for the other. Those who develop the scientific attitude, the spirit of the learner, and the ability to use the scientific method, have acquired the only reliable means of acquiring a sound education, and they have also a sure method of integrating the personality on the higher levels, of developing permanent healthful interests, of acquiring protection from injurious inhibitions, and of gaining that self-control that is the test of sanity in practical situations.

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INTELLIGENCE AND INTEREST IN VOCATIONAL ADJUSTMENT[1]

A STATISTICAL STUDY

By Douglas Fryer

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I. The Sample

1. Problem:

The investigation reported here is a consideration of intelligence, as measured by intelligence tests, in its relation to vocational adjustment. As an allied problem the value of vocational interest as a criterion of adjustment has been studied.

Two closely connected questions are raised by the main problem in the examination of the relation of intelligence, considered as isolated from other factors, to vocational adjustment. The first deals with the problem of the intelligence of vocational counsel subjects as they compare as a group with the general population. The second question inquires into the degree of maladjustment or wastage from the standpoint of intelligence alone. The allied problem of the value of interest as a determinant of vocational adjustment is one on which opinion is sharply divided and on which the data of this investigation are indicative.

The two problems of the investigation reported here may be stated for the purposes of statistical measurement in the form of questions:

[1]Abstract of dissertation submitted to the Graduate Board of Clark University on Candidacy for the degree of Doctor of Philosophy. Tables numbered as in original.

1. What is the quantitative importance of intelligence in vocational maladjustment as found among counsel subjects?

2. What is the relative significance of interest to ability (as measured by intelligence tests) in vocational adjustment?

2. Sources and General Characteristics of Sample:

The data used have been secured in actual practice of vocational counsel. The investigation is based on 320 men voluntarily applying for vocational counsel during the years 1921 and 1922 in the Vocational Department, Central Branch, Y. M. C. A., Brooklyn, N. Y. All subjects were either members of the Association or registrants of the placement bureau operating in the Vocational Department. Less than 5 per cent were from the latter group, although on the basis of new members for each body the placement bureau might have been expected to contribute 20 per cent to the total number of applicants for counsel. Occupational distribution of Association members (7997) was as follows: professions, 11 per cent; commercial occupations (distribution), mental work section, 66 per cent; manual work section, 1 per cent; maintenance occupations, 11 per cent; crafts (production), 11 per cent. For the placement registrants (1026) there was a falling off in the professions and mental work section and increase in other sections, as follows: professions, 3 per cent; commercial occupations, mental work section, 51 per cent; manual work section, 9 per cent; maintenance occupations, 18 per cent; crafts (production), 19 per cent.

This indicates a wide range in the sources but with the mode among the clerical-executive group of distributing business. On the basis of the low percentage of counsel subjects coming from the placement bureau the assumption seems in order that applicants for employment are not usually interested in vocational counsel while men already in positions form the largest group desirous of counsel; further it seems that men in the higher occupational levels are more willing to go through the prescribed process of vocational counsel in the hope of advancing themselves.

The 320 men used as the basis of this study voluntarily engaged in 1577 interviews and examinations, physical, psychological, vocational, educational, religious and specifically occupational, an average of 4.9 interviews per person. The age of the men ranged from 16 to 44, with a median age of 24.03 years. More than 80 different occupations are represented by these 320 subjects.

3. Measurements Used in Investigation:

As a part of the individual vocational counsel process, before meeting the counselor, the subjects composing the sample made a brief statement of personal history under the direction of a clerk, and from these histories was derived information used in this study concerning actual and desired occupation. Early in the process the subjects were tested upon their general intelligence, either Army Alpha, form seven, or Business Alpha,[2] being used in groups, the Binet or Army performance used for re-examination of individuals. All scores are expressed in terms of Army Alpha.

4. Occupational-Intelligence Standards:

The *actual* and the *desired* occupations of the subjects, secured from the history blank, have been given an intelligence rating corresponding to the central tendency (median) found to exist among workers in that occupation. This provides two of the scales of intelligence ratings: (1) the intelligence requirements of the actual occupations of subjects, and (2) the intelligence requirements of the desired occupations of subjects.

The application of the intelligence test in vocational psychology during the last five years has resulted in the classification of occupational levels on the basis of intelligence. Definite proof of four or five such levels was established as a by-product of the psychological examining in the United States Army during the World War (15, p. 832). Proctor (11, p. 334-8) reworked the Army data, finding five occupational groups, unskilled, semi-skilled, skilled, business and clerical, and professional. Terman (13, a, p. 274) gives three levels in the industrial occupations, corresponding to the first three levels of Proctor. Bridges and Coler (1, b), Pressey (10) and Young (16), making studies of the intelligence of school children, find a close correspondence between ranks of children in intelligence and ranks according to occupations of fathers, and Pressey states:

"It seems reasonable to infer that the differences found between the occupational groups are probable true differences in a fundamental, underlying general intelligence or native endowment" (p. 95).

These occupational levels may more appropriately, from the standpoint of vocational counsel, be considered as occupational fields or large occupational groups between which there is considerable overlapping, and for vocational prognosis these general levels are perhaps as exact limits as can be used with authority. However, in a statistical analysis of

[2]Business Alpha, "The 20 Minute Intelligence Examination for Group and Individual Use, Arranged and Standardized for Vocational and Business Purposes," by H. D. and L. P. Fryer, Carlisle Press, Brooklyn, 1922. In the correlations of Army Alpha, form seven and Business Alpha, form A, $r = +.989$, of Army Alpha, form seven and Business Alpha, form B, $r = +.993$, and of Business Alpha, forms A and B, $r = +.950$.

the degree of wastage of intellectual capacity, or ability to do mental work, found among men applying for counsel the central tendency or median intelligence of workers in a particular occupation, indicating the most probable intelligence requirement for the occupation, offers a basis for rating and comparison.

The foremost work of standardization of particular occupational-intelligence standards is contained in the five studies, totaling approximately 60,000 cases and 115 occupations, made by the Army psychologists (15, p. 819-37). Terman contributed the only study prior to this, giving norms for policemen and firemen (13, b). He also reports (13, a) data from an unpublished study by Waugh in which norms are secured for street-car motormen and conductors, salesgirls (department store), R. R. engineers and buyers (department store), and data from a study by Knollin and Zeidler offering norms for business men (small merchants). Flanders (3) reports the intelligence range for express clerks, Miner (8) for four types of salesmen, and Poffenberger (9) for women secretary-stenographers. With these studies as a basis, supplemented by the work of the Vocational Department (5), the list of occupational-intelligence norms used in the ranking of actual and desired occupations of the subjects in this study has been prepared. Correlations between the common occupations of the several large studies are: Army S. G. O. study vs. Army Devens study, 26 common occupations, $r = +.88$; Army S. G. O. study vs. Vocational Department study, 62 common occupations, $r = +.97$; Army S. G. O. study vs. Army Wadsworth study, 24 common occupations, $r = +.96$.

The three distributions used for comparison in the present investigation are as follows (all measures expressed in terms of Army Alpha):

(1) The intelligence measure of the subjects.
(2) The intelligence requirement of the *actual* occupation of the subjects.
(3) The intelligence requirement of the *desired* occupation of the subjects.

II. The Intelligence of the Sample

Forty-five per cent of the 320 subjects of the study are in the "very superior" intelligence group, according to the Army classification of intelligence, 27 per cent in the "superior," 16 per cent in the "high average," 8 per cent in the "average," 3 per cent in the "low average" and 1 per cent in the "inferior" group. The table which follows (Table II) presents these figures as well as comparative columns for the Army white draft (15, p. 679) and a theoretical distribution for the civilian white population.

While only 12 per cent are included in the superior groups for the Army distribution and 17 per cent for the theoretical distribution of the white population, 72 per cent of those applying for vocational counsel fell within these groups, again suggesting that the men higher on the scale of intelligence,

TABLE II. INTELLIGENCE DISTRIBUTION IN PER CENT OF 320 COUNSEL SUBJECTS COMPARED WITH DISTRIBUTION OF ARMY WHITE DRAFT AND CIVILIAN WHITE POPULATION (THEORETICAL)

Intelligence Groups	*Distribution of 320 Counsel Subjects*		*Percentage Distribution of Army White Draft*	*Percentage Distribution of Civilian White Adult Population*
	Number	*Per Cent*		
Total	320	100	100	100
A (Very Superior)	143	45	4.1	7
B (Superior)	87	27	8.0	10
C+(High Average)	51	16	15.0	17
C (Average)	27	8	25.0	25
C—(Low Average)	8	3	23.8	20
D (Inferior)	3	1	17.1	14
D—(Very Inferior)	1	—	7.0	6
E (Useless)	—	—	—	1

as we saw earlier of men higher on the scale of occupations, are most interested in availing themselves of the process of counsel.

It was thought that possibly this extreme concentration at the upper end might have been caused by those examined by the shorter test. Considering only the 207 cases tested by Army Alpha, however, we find even closer concentration in the superior groups, the distribution being by per cent: A, 52; B, 26; C+, 14; C, 6; C—, 2. The Army Alpha group alone shows 78 per cent in the superior groups in contrast with 72 per cent in these groups of all subjects, regardless of test. Within the 45 per cent of the A group, all subjects, 24 per cent attained a rank of 155 and above, while 12 per cent out of the 45 attained a rank of 170 and above, indicating the very superior quality of many of the men applying for counsel.

If the intelligence distribution of the subjects be expressed in age groups it appears that the age group 25-29 years inclusive shows the highest percentage of superior intelligence (A and B groups). Age group 20-24 has the highest per cent of very superior intelligence (A group). Over 70 per cent of both age groups, 20-24 and 25-29, fall within the two superior intelligence ranks; age group 16-19 is close with 67 per cent while age group 30-44 has just 55 per cent. Fourteen, twelve and seven per cent respectively of age groups 16-19, 20-24 and 25-29 are of average intelligence or below, while in age group 30-44, 29 per cent are of average intelligence or below. The distribution in age groups was as follows: 16-19 years,

52; 20-24 years, 152; 25-29, years, 85; 30-44 years, 31. It is possible that the small number of cases, 31, in the oldest groups, gives an erroneous impression, although it is also possible that older men seeking vocational counsel are inferior intellectually to younger men also coming for counsel.

III. Comparison of Intelligence of Subjects and Intelligence Requirement of Actual Occupations

Two hundred ninety-six of the counsel subjects furnished data permitting a rating of their actual occupation on the basis of the intelligence requirement. Table V presents a comparison of the intelligence of the men with the intelligence requirement of the actual occupation. It here appears that 75 per cent of these subjects possess more intelligence than that required by their occupations, 9 per cent have the same as required, and 16 per cent have less intelligence than required by the occupation. The intelligence score is given in class intervals of ten points.

Table V. Intelligence of Subjects vs. Intelligence Required by *Actual* Occupation, by Number and Per Cent
+ = More than required 0 = Same as required — = Less than required

Intelligence	*Total*		+		0		—	
Groups	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Total	296	100	221	75	26	9	49	16
190-199	5	100	5	100	—	—	—	—
180-189	11	100	11	100	—	—	—	—
170-179	17	100	17	100	—	—	—	—
160-169	18	100	17	94	1	6	—	—
150-159	34	100	32	94	—	—	2	6
140-149	29	100	29	100	—	—	—	—
130-139	21	100	20	96	1	4	—	—
120-129	30	100	26	86	2	7	2	7
110-119	34	100	30	88	2	6	2	6
100-109	19	100	16	84	2	11	1	5
90-99	21	100	12	57	6	29	3	14
80-89	13	100	3	23	2	15	8	62
70-79	13	100	2	15	6	46	5	39
60-69	13	100	—	—	3	23	10	77
50-59	7	100	—	—	—	—	7	100
40-49	2	100	1	50	—	—	1	50
30-39	5	100	—	—	1	20	4	80
20-29	—	—	—	—	—	—	—	—
10-19	2	100	—	—	—	—	2	100
0-9	2	100	—	—	—	—	2	100

The same distribution for the various age groups may be summarized briefly. Ages 16-19 show 71 per cent with more, 13 per cent with the same, and 16 per cent with less intelligence than required by the actual occupation; ages 20-24, 81 per cent with more, 3 per cent with the same, and 16 per cent with less intelligence; ages 25-29, 74 per cent with more, 14 per cent with the same, and 12 per cent with less intelligence; while ages 30-44 show only 61 per cent with more intelligence, 6 per cent with the same and 33 per cent with less intelligence than that required by the occupation. The particularly high percentage of excess intelligence, or more intelligence than required by the job, among the men under thirty, suggests the important possibilities for these years open to vocational counsel.

The correlation coefficient of intelligence versus intelligence required for actual occupation, all age groups, is $+0.47\pm.029$ (S. D., intelligence distribution 38.9, occupational requirement, 22.9). For the age group 16-19, $r = +0.50\pm.092$ (S. D., intelligence distribution 35.6, occupational requirement, 17.6). For the age group 20-24, $r = +0.50\pm.051$ (S. D., intelligence distribution 32.6, occupational requirement, 22.9). For the age group 25-29, $r = +0.49\pm.071$ (S. D., intelligence distribution 36.1, occupational requirement 25.7). For the age group 30-44, $r = +0.44\pm.126$ (S. D. intelligence distribution 46.8, occupational requirement 23.8).

In Table VIII is expressed in simple form the relationship

TABLE VIII. SHOWING PROBABILITY OF DISTRIBUTION, BY INTELLIGENCE OF SUBJECTS AND INTELLIGENCE REQUIRED FOR *ACTUAL* OCCUPATION

Intelligence of Subjects	*Intelligence-Requirement for Actual Occupation*										
	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
I		4			9	3					16
II		***2***	1	12	8	11	1				35
III		2		10	16	27	7	1			63
IV				***6***	15	25	4	1			51
V				2	***13***	30	7	1			53
VI		1			5	***17***	9	1	1		34
VII					2	12	***12***				26
VIII					2	4	2		1		9
IX					2	1	1		***1***		5
X						1		3			4
Total		9	1	30	72	131	43	7	3		296

between intelligence and the intelligence requirement of the actual occupation, as shown by the 296 subjects. Scores are given in deciles, "I" standing for scores 180-199, "X" for 0-19.

On the basis of this table it could be predicted that a man whose intelligence places him in I, the highest intelligence group, would have four chances out of 16 of finding an occupation which required intelligence of the order just below his group, in II; or a man whose intelligence places him in group V will have no chances at an occupation in groups I, II and III, but will have 2 chances out of 53 of falling in an occupation in group IV, 13 out of 53 in group V, 30 in group VI, 7 in group VII and 1 in group VIII.

Obviously for such prediction more cases are required than are here given, but the table is valuable in showing the lack of close correlation between intelligence and the intelligence-requirement of the occupation, with a definite drag on the occupations end. The exceptionally large number of cases falling in group VI of the occupations, 131, suggests either a tendency of the scale to mass a large number of occupations about the average in a manner more than justified or else the existence in the division of labor of a vast number of tasks, all requiring about the same intelligence. If such tasks outnumber the men of average intelligence it becomes then necessary for society to force into these tasks men of superior intelligence. Starting with the evidence of vocational maladjustment among men whose intelligence is superior to that required for their occupations, the hypothesis of such a drag upon the superior men by the conditions of economic life today becomes not impossible of acceptance.

In Table IX is expressed by group-total and age-groups the deviation of the intelligence scores for the individual from the intelligence score required for the occupations. Ten points on the Alpha scale of 212 points are taken as the range within which no deviation is counted.[3]

Under the group total in Table IX three individuals are 100 points, or 10 units of deviation, superior to the intelligence required for their actual occupation, while two individuals are below the intelligence required for their occupation by 8 deviation units. Thirty-five individuals, or 12 per cent, are superior by 50 points to the intelligence required for their occupation while 94 individuals, or 32 per cent, are superior by 50 points *or more*. On the other side only 9 individuals,

[3]Difference between mean scores of Alpha forms was found to be 5.96 points on the scale of 212 points. See (15) Table 177, p. 660.

TABLE IX. INTELLIGENCE OF SUBJECTS VERSUS INTELLIGENCE REQUIRED BY *ACTUAL* OCCUPATION, BY NUMBER AND PER CENT FOR TOTAL GROUP AND AGE GROUPS ACCORDING TO DEVIATIONS

\+ = More than required 0 = Same as required — = Less than required

Deviations of Ten Points on Scale of 212	*Groups[4] Total*			*Age Groups*											
				16-19			*20-24*			*25-29*			*30-44*		
	No.	*%*	*Accumulative %*	*No.*	*%*	*Accumulative %*	*No.*	*%*	*Accumulative %*	*No.*	*%*	*Accumulative %*	*No.*	*%*	*Accumulative %*
Total	296	100	100	31	100	100	98	100	100	58	100	100	18	100	100
+10	3	1	1				1	1	1	2	3	3	–		
+ 9	8	3	4				—	—	1	2	3	6	2	11	11
+ 8	15	5	9	1	3	3	6	6	7	4	7	13	–	—	11
+ 7	16	5	14	1	3	6	6	6	13	–	—	13	–	—	11
+ 6	17	6	20	1	3	9	5	5	18	5	8	21	–	—	11
+ 5	35	12	32	6	19	28	14	15	33	5	9	30	2	11	22
+ 4	30	10	42	3	10	38	12	12	45	8	14	44	2	11	33
+ 3	32	11	53	3	10	48	13	14	59	5	9	53	2	11	44
+ 2	39	13	66	3	10	58	11	11	70	7	12	65	2	11	55
+ 1	26	9	75	4	13	71	11	11	81	5	9	74	1	6	61
0	26	9	9	4	13	13	3	3	3	8	14	14	1	6	6
— 1	15	5	16	–	–	16	7	7	16	4	6	12	3	17	33
— 2	12	4	11	2	7	16	4	4	9	1	2	6	–	—	16
— 3	10	3	7	2	6	9	4	4	5	1	2	4	–	—	16
— 4	3	1	4	1	3	3	1	1	1	–	—	2	1	6	16
— 5	4	1	3							1	2	2	1	5	10
— 6	1	—	2										–	—	5
— 7	2	1	2										1	5	5
— 8	2	1	1												
— 9															
—10															

or 3 per cent, are inferior by as much as 50 points. Similar facts appear throughout the age groups.

If a probable error of 25 points either side of the median be accepted, we may rank all individuals falling above the +2 deviation and below the —2 deviation as vocationally maladjusted on the basis of intelligence. That is to say, on the basis of this study, an individual making an intelligence score 25 points above or below the central tendency for his occupa-

[4]Groups total includes a miscellaneous age group not distributed according to age.

tion is considered in need of further vocational adjustment to secure a satisfactory expression and utilization of his intelligence capacity.

A probable error of 25 points has been arbitrarily assigned for this study in order that any conclusion of maladjustment drawn from the figures should err on the side of conservatism. (Starch, 12, p. 426-9, found a probable error for teachers' ratings of examination papers of 6.4 points on a scale of 100. This equals 15 points on a scale of 212. For the various Army Alpha forms, a difference of mean scores of 5.96 has been found, 15, p. 660.) In vocational prognosis the critical score below which an individual may be advised with some authority that he will tend to be unsuccessful because of lack of intelligence capacity, is the first quartile of a reliable distribution of the workers in the particular occupation.[5]

There is some reason to expect dissatisfaction on the part of the individual, at least intelligence wastage, if with a rating above the third quartile of the occupational distribution. For 103 occupations the average (mean) of the first quartiles has been found to be 49 points and of the third quartiles 96 points. This is less than 24 points either side of the median and within the probable error accepted for this study, outside of which individuals are considered vocationally maladjusted on the single basis of intelligence.

With a probable error of 25 points either side the median (Table IX), 53 per cent fall outside the range of adjustment because of more intelligence and 7 per cent because of less, making a total of 60 per cent of the group studied which may be rated as vocationally maladjusted on this single factor of intelligence. Among the 16-19 years group 57 per cent are maladjusted, among the 20-24 age group 64 per cent, among the 25-29 age group 57 per cent and among the 30-44 age group 60 per cent are maladjusted. It will be noted that 35 per cent of the total group are maladjusted more than 50 points, but that only 3 per cent are thus maladjusted because of less intelligence than the occupation requires, and, further, that this 3 per cent of the total falls in the two older age groupings.

IV. Comparison of Intelligence of Subjects and Intelligence Requirement of Desired Occupations

Table X presents the comparison of the Intelligence of the subjects with the intelligence requirement of their desired occupation, as expressed by them on first applying for vocational counsel. These occupational ambitions were stated before the counsel process was begun. Such choice was given by 98 out of the 320 men; frequent responses from those who did not state a definite preference consist in the statement that they are unwilling to make a choice on the basis of what they then know of themselves and of the occupational world. The use of detailed self-analysis blanks which ask the same sort of questions which the subjects have come to discuss

[5]Cf. discussion and reference to authorities by Proctor (11, p. 538).

with the counselor may be seen to be of dubious value and at times even to cause a feeling of resentment.

TABLE X. INTELLIGENCE OF SUBJECTS VS. INTELLIGENCE REQUIRED BY *DESIRED* OCCUPATION, BY NUMBER AND PER CENT
+ = More than required 0 = Same as required — = Less than required

Intelligence Groups	*Total*		+		0		—	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Total	98	100	57	58	10	10	31	32
190-199	1	100	1	100	—	—	—	—
180-189	2	100	2	100	—	—	—	—
170-179	6	100	6	100	—	—	—	—
160-169	2	100	2	100	—	—	—	—
150-159	7	100	5	71	—	—	2	29
140-149	9	100	8	87	1	13	—	—
130-139	9	100	6	67	2	22	1	11
120-129	14	100	7	50	4	29	3	21
110-119	13	100	11	85	—	—	2	15
100-109	8	100	6	75	—	—	2	25
90-99	3	100	2	67	—	—	1	33
80-89	8	100	1	13	2	25	5	62
70-79	6	100	—	—	1	17	5	83
60-69	4	100	—	—	—	—	4	100
50-59	3	100	—	—	—	—	3	100
40-49	—	—	—	—	—	—	—	—
30-39	2	100	—	—	—	—	2	100
20-29	—	—	—	—	—	—	—	—
10-19	1	100	—	—	—	—	1	100
0-9	—	—	—	—	—	—	—	—

It will be noted in Table X that 58 per cent have more intelligence than required by the desired occupation; 10 per cent the same and 32 per cent have less than required by the occupation.[6] Age groups 20-24 and 25-29 were found to show the highest per cent of those having more intelligence than that required by the desired occupation, a situation similar to but even more striking than that presented by a comparison of the actual occupation with the intelligence capacity. Age group 16-19 has 47 per cent with more, 6 per cent with the same, and 47 per cent with less intelligence than required by desired occupation; 20-24 years, 62 per cent with more, 7 per cent with the same, 31 per cent with less; 25-29 years, 70 per cent with more, 10 per cent with same, 20 per cent with less; 30-44 years, 17 per cent with more, 50 per cent with the

[6]As in previous tables, class intervals are of 10 points and individuals falling anywhere within the class intervals of their occupation's requirement were rated as having the same intelligence as that required.

same, 33 per cent with less intelligence. The years from 20 to 30 offer a picture of intelligence wastage not found among the youths or the older men of 30 and above. Men in these two groups are "finding their stride" vocationally and their future success or failure will be established largely upon the basis of what they do during the years 20 to 30. Such a large indication of vocational maladjustment on the basis of too much intelligence for the occupation desired presents a peculiarly impressive problem to the vocational counselor.

The coefficient of correlation of the 98 cases for intelligence versus intelligence-requirement of the desired occupation is $+0.38 \pm .058$ (S. D., intelligence 36.2, desired occupation's requirement 23.5). In some cases the desired occupation was expressed in rather general terms, so that in rating these ambitions there here entered a factor of interpretation not present in the rating of the actual occupations, which were, of course, stated more precisely. To minimize this personal equation, the classification of these choices was made by two individuals, with a result that the final correlation was the same, as given above.

The relationship between intelligence and desired occupation's requirement is best seen in Table XII, where it will be noted that on the basis of the assumed probable error of 25 points, as in the previous section, 36 per cent would be maladjusted in intelligence if placed in their desired occupations because of having more intelligence while 15 per cent would be so maladjusted because of having less intelligence than required, so that a total of 51 per cent would be maladjusted if placed in the desired occupation.

It would seem from Table XII that placement of individuals on the basis of the vocational ambition, or desired occupation, or vocational training on the basis of choice would cause a satisfactory adjustment in not more than 50 per cent of the cases. This opens up the practical problem: To what extent in vocational counsel should the expressed interest of the individual be followed? This practical problem can be considered without entering into the question of the importance of interest to the performance of function and without denying the value of interest as an activity-drive.

Thorndike (14) is the chief exponent of the theory that "early interests . . . are rather stable features of an individual's constitution and are symptomatic, either as cause or effect or both, of abilities" (14, c, p. 179). In a study of 100 students and later of 344 students he finds a correlation between interest in later elementary school and college of .66; between interest in later elementary school and ability in college of .60 in the one study and .66 in the other; and between the order of abilities and the order

TABLE XII. INTELLIGENCE OF SUBJECTS VS. INTELLIGENCE REQUIRED BY *DESIRED* OCCUPATION, BY NUMBER AND PER CENT, ACCORDING TO DEVIATIONS

+ = More than required 0 = Same as required — = Less than required

Deviations of 10 Points	*Number*	*Per Cent*	*Accumulative Per Cent*
Total	98	100	100
+10			
+ 9	2	2	2
+ 8	—	—	2
+ 7	5	5	7
+ 6	1	1	8
+ 5	2	2	10
+ 4	13	13	23
+ 3	13	13	36
+ 2	16	17	53
+ 1	5	5	58
0	10	10	10
— 1	10	11	32
— 2	6	6	21
— 3	4	4	15
— 4	3	3	11
— 5	1	1	8
— 6	4	4	7
— 7	—	—	3
— 8	2	2	3
— 9	1	1	1
—10			

of interests in later elementary school, high school or later college of .89. He concludes:

"A person's interests in the late elementary school period resemble, in their order and relative strength, the constitution of interests which he will have eight years later to the extent of six-tenths of perfect resemblance. (14 b, p. 391.) The correlation between an individual's order of subjects for interest and his order for ability is . . . one of the closest of any that are known . . . On the whole the resemblance between interest and ability may safely be placed at about .9 of perfect resemblance. (P. 394.) Interests are . . . shown to be symptomatic, to a very great extent, of present and future capacity or ability . . . Interest and ability are bound very closely together. The bond is so close that either may be used as a symptom for the other almost as well as for itself." (P. 395.)

The present investigation touches mainly upon one of the two problems considered by Thorndike, that of the relation of ability (as measured by the intelligence test) and vocational interest, and leads to conclusions contrary to those of Thorndike. Considering Thorndike's data, based upon judgments by immature students upon, first, their dominant interest and, second, their ability, at three previous periods (elementary, high school and college) in seven general subjects: mathematics, history, literature, science, music, drawing and other hand work, it is not strange that a high

correlation has been secured. He has stated that the bond between interest and ability is "so close that either may be used as a symptom for the other almost as well as for itself," yet his study is based upon a demand that the students distinguish between the two and upon the assumption that a subjective judgment in retrospect of individual ability would agree with objective tests. We may with equal validity conclude from his study that interest tends to determine the individual's judgment of his ability. Kitson (7, a) has criticized the method used by Thorndike and refused to accept his results as a basis for a theory of vocational guidance, advancing the opinion that a positive correlation between adult interests and capacities would not be high. Freyd (4) says of Thorndike's studies that "The methods used were such as to make results of limited significance" (p. 244), yet others make use of the data as the only evidence available.[7]

Bridges and Dollinger (1, a) are the only other investigators attacking the problem of the relation of interest and ability. Over five hundred college students were used in the study, the correlation (mean square contingency, which could not exceed .894) between subjective rank in interest and subjective rank in ability for all courses combined being .57 (291 cases), and the correlation between subjective rank in interest and the objective rating of ability by school marks being .25 (256 cases). This relatively higher correlation for rank in interest and estimated rank in ability verifies the criticism above: the mutual dependence of the two subjective judgments. The writers hold Thorndike's high correlation of .89 as "merely a result of the subjective method of evaluating ability" (p. 313). They conclude:

"When ability is measured by a more objective means, namely college grades, a very low correlation between interest and ability is obtained, so low in fact that one might well be justified in the statement: A person's relative interests are an extraordinarily *in*accurate symptom of his relative capacities . . . a person's estimate of his ability is an extraordinarily inaccurate symptom of his real ability, for the correlation between the student's rankings of their courses in ability and the grades obtained is only .28." (1, a, p. 313.)

Thorndike has evaluated this study of Bridges and Dollinger (14, d), computing the correlation coefficients for 140 of the students and obtaining for ability as indicated by school marks and subjective rank in interest "estimated central tendency correlations" of .46 (median of the r's, .41). Using the same 140 cases he secured between subjective rank of ability and subjective rank of interest "estimated central tendency correlations" of .70 (median of the r's, .73). This leads him to conclude that "On the whole Bridges' data seem to corroborate the doctrine of a very close relation between the order of an individual's interests and the order of his abilities." (P. 376.)

It is possible in this connection to make use of data from an earlier study of Proctor's (11) regarding the ambitions of adolescent boys and girls. The intelligence scores are given on the Army Alpha scale and the vocational choices of the high school students are listed, so that it is possible to make the same comparisons for these adolescents as for the adults. Those giving unclassifiable occupations are omitted so that of the 930 cases only 806 are used. On the Army Alpha scale

[7]Starch (12, p. 62) and Hollingworth (6a, p. 190-2).

the intelligence distribution of the students was: 20 per cent A; 44 per cent B; 31 per cent C+; 5 per cent C (less than one-half per cent C —). For these high school students 64 per cent fall within the very superior and superior groups while for the 320 men studied 72 per cent fell within these groups. Hence although the high school students may not have reached in every case full development the very high percentage of those already in the superior grouping makes it possible to compare them with the adult occupational intelligence standards without great probability of error.

The occupational choices of these students were ranked on the same scale of occupational-intelligence standards as used above. Of the students 32 per cent had more intelligence than was required by their desired occupation, 24 per cent the same, and 44 per cent had less intelligence than required for the occupation. Correlation of intelligence and desired occupation's requirement is $+0.21 \pm .02$ (S. D. intelligence distribution 22.35, occupation's requirement 22.95). Correlation for these students is much lower than for adults, indicating a decided possibility that the desires of the adolescent pupils are an even less valuable index for vocational choice than are adult desires.

It is possible that reliable objective ratings of interest might materially change results, but there are no such ratings available. However, any data making use of subjective ratings of ability, particularly if the estimates are made by the individual being rated, can be considered relatively unimportant beside reliable objective standards for the measurement of ability, *e. g.*, either school marks or the general intelligence test. When these latter are used the correlations between interest and ability range, in the studies presented, as follows:

.21 vocational ambition of high school students.
.25 (mean square contingency) courses of interest of college students ("estimated central tendency correlations" by Thorndike .46).
.38 occupational desires of adult males.

From this a conservative conclusion appears to be that adult interests and ability have a correlation of not more than .5 and that for adolescents the correlation is much lower.

V. Relative Significance of Actual and Desired Occupation for Purposes of Vocational Guidance

When attempting to determine the significance of the actual and the desired occupation to vocational counsel the

correlation is found to be $+0.43 \pm .056$ between the intelligence required for the actual occupation and that for the desired occupation.[8] This correlation between the intelligence requirements of the actual and desired occupations indicates, in spite of some similarity, a significant unlikeness. Sixty-six per cent of the subjects desired an occupation with different requirement from that in which they were actually engaged. Standard deviation for the desired occupations is 24.9, for the actual occupations 20.2. Showing the relationship according to deviation, it appears that the requirement for the desired occupation is in 42 per cent of the cases higher than the requirement for the actual occupation although 51 per cent of the cases are concentrated within ten points of each other and 77 per cent fall within the range of 25 points either side of the median. The desired occupations are relatively higher in their intelligence requirement than are the actual occupations.

In Table XVI the correlated factors (1, intelligence versus desired occupation, 2, intelligence versus actual occupation) may be compared. Here it will be seen that there is a *higher per cent* of maladjustment for those having more intelligence in the actual occupation than in the desired occupation. However, for those having less intelligence than required there would be more maladjustment if they secured their desired occupation than there now exists for them in their actual occupation. It is possible that a tendency to over-rate one's ability operates with this latter group to cause a maladjustment of their choices to their capacities, which does not appear in the case of the superior individuals.[9] However, the percentage of superior individuals who under-rate themselves, as seen in this table, makes it impossible to base any theory on the results, save to say that both under-rating and over-rating of ability are present while close approximations of desire to actual capacity are fairly rare.

All previous comparisons presented in this section have been based on the central tendency (median). The proportion of subjects falling outside the probable error of 25 points have been considered maladjusted. This is only a rough comparison and does not take into account the exact relationship for each individual subject. The proportions of 51 per cent

[8]Data available for ninety cases only.

[9]Out of a small group of individuals Hollingworth (6, b) found individuals above the average intelligence less prone to overestimate themselves than individuals below the average. He considers that the individual tends to overestimate himself if the trait is considered desirable. This would of course appear in vocational ambitions.

TABLE XVI. COMPARISON BY PER CENT OF THE TWO CORRELATED FACTORS:
1. SUBJECT'S INTELLIGENCE VS. INTELLIGENCE REQUIRED BY *DESIRED* OCCUPATION.
2. SUBJECT'S INTELLIGENCE VS. INTELLIGENCE REQUIRED BY *ACTUAL* OCCUPATION.

+ = More than required 0 = Same as required — = Less than required

Intelligence vs. Desired Occupation		*Deviations of 10 Points on Scale of 212*	*Intelligence vs. Actual Occupation*	
Accumulative Per Cent	*Per Cent*		*Per Cent*	*Accumulative Per Cent*
—	—	+10	1	1
2	2	+ 9	3	4
2	—	+ 8	5	9
7	5	+ 7	5	14
8	1	+ 6	6	20
10	2	+ 5	12	32
23	13	+ 4	10	42
36	13	+ 3	11	53
53	17	+ 2	13	66
58	5	+ 1	9	75
10	10	0	9	9
32	11	— 1	5	16
21	6	— 2	4	11
15	4	— 3	3	7
11	3	— 4	1	4
8	1	— 5	1	3
7	4	— 6	—	2
3	—	— 7	1	2
3	2	— 8	1	1
1	1	— 9	—	—
—	—	—10	—	—
100	100	Total	100	100

maladjusted in the desired occupations and 60 per cent maladjusted in the actual occupations indicate a slightly superior potential adjustment in favor of the desired occupation. The correlation coefficient, a measure which considers each individual's intelligence in relation to the actual or desired occupation's requirement, shows a slightly superior adjustment for the actual occupations. This gives the exact correlation, however, both measures agree fundamentally and there is no great difference between the actual and the desired occupations from the standpoint of predictive significance

for vocational guidance. The situation may be summarized as follows:

More intelligence than required for desired occupation, 36 per cent
More intelligence than required for actual occupation, 50 per cent.
Same intelligence as required for desired occupation[10], 49 per cent.
Same intelligence as required for actual occupation, 40 per cent.
Less intelligence than required for desired occupation, 15 per cent.
Less intelligence than required for actual occupation, 10 per cent.
Correlation coefficient intelligence vs. desired occupation, +0.38.
Correlation coefficient intelligence vs. actual occupation[11], +0.47.

VI. Summary

1. On the basis of the sources from which subjects for vocational counsel come, it appears that men seeking employment are not usually interested in vocational counsel, even though this service be offered without charge, while men already in positions form the largest group desirous of counsel. Men in the higher occupational levels are those most interested in going through a prescribed process of vocational counsel in the hope of advancing themselves.

2. Men higher on the scale of intelligence, or above the average, are most interested in vocational counsel. Of the 320 men studied 88 per cent fell in the intelligence groups of very superior, superior and high average; 72 per cent in the two superior groups while the very superior, or "A," showed the highest percentage of any single group, 45 per cent. This is in striking contrast to a distribution of intelligence of the Army or of the adult population.

3. Men applying for counsel below the age of thirty are higher on the scale of intelligence than are men above thirty.

4. Allowing a probable error of 25 points either side the median it has been found among the subjects applying for vocational counsel that 60 per cent are maladjusted on the basis of intelligence, 50 per cent because of more and 10 per cent because of less intelligence than required by the occupation in which they are engaged. In the correlation for the entire group $r = +0.47 \pm .029$, and for the various age groups there is no significant difference. On the basis of this study there appears no close correlation between intelligence of men applying for vocational counsel and intelligence-requirement of the *actual* occupation.

5. Older men applying for counsel, thirty years and over, appear to be suffering vocational maladjustment because of

[10]Measures counted the same within 50-point range.

[11]Correlation coefficient for the same 96 subjects used in computing that for intelligence vs. desired occupation resulted in $+0.42 \pm .057$.

less intelligence than is required by their occupation to a greater degree than is true of men under thirty. Younger men, on the other hand, appear to be suffering maladjustment because of more intelligence than is required. Standard deviation of the group over thirty is sufficient for the figures to be accepted as suggestive, although the number of subjects is small.

6. Considering the intelligence-requirement of the desired occupation of the counsel subjects there appears no high correlation between vocational interest and ability as measured by the intelligence test. $R = +0.38 \pm .058$. If these counsel subjects could be placed in their desired occupation a high degree of maladjustment would be present on the basis of intelligence; allowing a probable error of 25 points each side the median 36 per cent would be maladjusted because of more intelligence and 15 per cent because of less intelligence, so that a total of 51 per cent would be maladjusted if placed in the occupation of their desire.

Among adolescents, according to a study of 806 high school students, a still higher degree of vocational maladjustment would occur if the subject were placed in their occupational ambition. $R = +0.21 \pm .02$, for the intelligence requirement of the vocational interest and the ability as measured by the mental test.

Based upon these and other investigations where objective methods of measuring ability are used it seems that a correlation of *not more* than .5, and probably less, is present between interest and ability in adults and that among adolescents the correlation is still lower.

7. No great difference appears between the *actual* and *desired* occupations from the standpoint of predictive significance in vocational adjustment. There are decided unlikenesses between these occupations. The desired occupations are on the whole higher on the scale of intelligence. While there are more vocationally maladjusted on account of superior intelligence in the actual occupation, if the subjects were placed in the desired occupation there would be more maladjustment because of less intelligence than required for the occupation. The correlation coefficient between the actual occupation's requirement and intelligence of the subject indicates a more exact relationship existing there than would exist between the desired occupation's requirement and intelligence of subject. But, considering the proportions of the subjects, a higher percentage (49 per cent in desired occupation, 40 per cent in actual occupation) falls in the group having approximately the same intelligence as required by the desired occupation.

8. From this study of 320 vocational counsel subjects there appears to be in intelligence a factor of vocational maladjustment of considerable importance. These men, expressing their vocational dissatisfaction by applying voluntarily for counsel, display a decided disharmony between their rankings in general intelligence and the requirements of their occupations in general intelligence. Considered as a separate factor, distinct from all others, intelligence appears to block out an individual's vocational possibilities, and the placing of an individual in an occupation requiring to any great degree more or less intelligence than is present in the individual may be expected to result in vocational maladjustment.

9. The findings of this investigation do not deny the psychological significance of interest as a drive to activity, nor do they deny the limitation placed upon interest, as well as ability, by hereditary endowment.

10. While this investigation indicates the quantitative importance of intelligence wastage as a factor in vocational maladjustments its data do not bear upon the relative significance of intelligence among other factors of adjustment, *e. g.*, the affective factors, economic factors, social factors, etc.

VII. Interpretation

1. The Intelligence Factor in Vocational Adjustment:

This investigation has presented evidence upon the "quantitative importance of intelligence in vocational maladjustment as found among counsel subjects." All evidence shows intelligence as a factor of vocational maladjustment and definitely indicates the importance of this factor as found among individuals voluntarily applying for vocational counsel.

Within the limits set by general intelligence, however, other factors operate to cause or prevent vocational adjustment. Physical strength, endurance, physical personality, special sensory equipment, etc., make up one group of determiners. In another group are the so-called personality traits, industriousness, interest, character, leadership and co-operativeness. More elusive from the standpoint of measurement, as more individual and variable, are the emotional factors. In spite of co-ordination of all other factors with the requirements of the occupation affective disturbances can easily disrupt the whole adjustment. Fear, love, rage and hate are easily recognized as powerful factors but not less important in vocational adjustment may be excessive individualism, a feeling of inferiority, the "will-to-power" and other apparently

minor factors. In a previous study[12] the importance of the affective factors in vocational maladjustment has been treated.

> The particular significance of intelligence as a determiner of vocational adjustment lies partly in the importance of intelligence itself, and partly, for the present at least, in a practical aspect. Tests for measuring intelligence have been standardized on a larger scale than for these other factors and the development of occupational-intelligence standards, a process which should continue for some years, offers the opportunity of placing the individual readily in that group of occupations to whose requirements his intelligence capacity most closely corresponds. It cannot be overlooked, however, that intelligence (as measured by the tests) is only a part of that complex whole which is the individual functioning in society, and that minor maladjustments of one or more factors may always be unavoidable in securing the greatest possible harmony and adjustment between the total requirements of the vocation and the total capacities of the individual.
>
> The aim of vocational guidance may be briefly stated as vocational satisfaction of the individual. As the individual is this complex whole of varying abilities, interests and desires, the problem is one of adjustment of the whole personality. Personnel selection, however, in the interests of business is concentrated on the selection of specific abilities necessary for the performance of specific tasks. Thus a man who is faithful and industrious may be placed in a position demanding chiefly these qualities, and other abilities which he may possess but which fall outside the requirements of the particular occupation may be neglected or actually repressed. This situation may to a degree account for the high percentage of men who in the present study were found with intelligence superior to their occupations. In some occupations such a condition of excess intelligence is being recognized as undesirable from the standpoint of the employer, and upper levels of intelligence are being set, so that a man will not be accepted for the occupation if his score on the mental test is too high. But the only adjustment possible for an individual of uneven personality and capacities may lie in a compromise such that maladjustment on the basis of intelligence may not for him represent the worst possible situation, although it is doubtful if satisfaction in the work itself can continue without the possibility of outlet for the intelligence.

From the social point of view, however, maladjustment in relation to intelligence represents a form of social wastage. If there is developing, together with the increased use of machines, or should develop, an increasing subtraction from the sum total of tasks required by society, of intelligence-requiring tasks, so that a man by nature of his occupation is not permitted to make the fullest contribution possible from his intellectual capacity, just so far is there a lessening of the sum total of possible social achievement. Under a different industrial organization, with shorter hours of labor, it is possible that avocational activity may use up the surplus, but the greater the intelligence which is not utilized, the greater becomes the loss to society. As the standardization

[12] "Affective Factors in Vocational Maladjustment," by Lorine Pruette and Douglas Fryer, *Mental Hygiene*, 1923, vii, p. 102-18.

of processes continues, it is possible that more and more of the tasks necessary for maintaining society in its present state will be subtracted from those which offer employment to intelligence. The creation of new machines tends to increase production rather than to lessen labor; the machine must still be tended by human labor but as the machine becomes more perfected the exaction of intelligence becomes less, so that the widespread industrial utilization of the feeble-minded looms up before us as a distinct possibility.

Vocational maladjustment may be due either to the wastage of intelligence, to a surplus of intelligence inhibited by the presence of such a large proportion of routine tasks in the present division of labor, or it may be due to lack of capacity to meet the demands of the economic world. In this study both forms of maladjustment have appeared, although the preponderance of cases falls among those who have a surplus of intelligence. It is possible that, contrary to the theory widely expressed that man's intelligence has not advanced sufficiently to keep pace with the tremendous advance of modern science and the complexity of the material culture of today, the condition apparent in this study, surplus of intelligence which does not find sufficient outlet in the present division of labor, is influential in producing the appearance of maladjustment between man and the conditions of living.

2. The Interest Factor in Vocational Adjustment:

This investigation has presented evidence upon the "relative significance of interest to ability (as measured by intelligence tests) in vocational adjustment." The psychological state of interest accompanies all activity. The problem is: Does it always have the same objects?

Among the many writers who have considered the psychological meaning of interest Burnham (2) defines this mental state clearly as, first, the affective accompaniment of all attention, a state of feeling, and, second, a permanent mental possession, a habit of preperception or prevision calling into existence habits of association and their accompanying emotional contents, both of inherited or acquired origin. Considering attention as "a reaction of the whole organism, comparable to the tropisms of plants and animals," Burnham says "we must suppose an affective state correlated with this reaction. This affective state is interest. . . . If we use the work interest in the sense of a permanent habit of preperception, what we mean is that our attention of the moment as preperception depends upon our habits of preperception." (P. 17.)

Interest accompanying the first act of attention upon an object could have little or no permanence. The objects of interest, or interests, which arise in relation to the "habits of preperception" would have permanence throughout life according to the laws of habit, learning, memory, etc. Kitson says (7, a, p. 353): "Another characteristic of interests is that

they vary in permanence . . . It often happens that a person with well-defined interests acquires new interests of such a nature as to displace old ones or seriously to modify them. So pronounced are the resulting vocational changes that the concept of evolution may well be applied to the vocational choices of many individuals." And again (7, d, p. 649): "though interest is undeniably a weighty factor in determining vocational success, to depend upon the ambiguous interest-responses of a young child is an exceedingly unreliable way to help him into an ultimate vocation."

To hold with Thorndike that early interests are rather stable features of an individual's constitution necessitates the denial of any great amount of variability within the life of the individual. During several years' experience in a vocational office the theory of permanence of objects of interest has been repeatedly put to the test and found untenable. Interests are continually changing, shifting, evolving; some vocations are highly desired today and others tomorrow. Vocational fads come and go, or sweep over large numbers at certain ages, as, notably, the banking fad among women during the world war and the engineering fad among young men of all classes of ability. The occupational ideals of the individual are also shaped by the social environment, if by no other means than limitation of choice through occupational ignorance. The group mores, embodying the group ideals, impress themselves upon the youth and a consciousness of his occupational "kind" operates to delimit occupational choices and possibilities. Interest, expressing itself in occupational choice, is not necessarily the same thing as interest functioning while actually "on the job" and the value of interest as a drive need not be denied while a considerable skepticism is felt toward the value of interest as a determiner of vocational choice.

Upon the alliance of interest and ability the findings of this study are clear-cut. It has been stated that "there appears to be no high correlation between vocational interest and ability . . . If these counsel subjects could be placed in their desired occupation a high degree of maladjustment would be present on the bases of intelligence." Kitson says in this regard (7, a, p. 354):

"One important objection to the reliance upon interest in vocational guidance is that interest in a vocation is not always associated with capacity to perform the tasks or to acquire the skill necessary for success in the calling. Occupations are crowded with people whose interest is intense and fervid yet whose ability is undeniably deficient."

This does not imply that interest and ability are never associated in their expression. It does mean that one is not predictive of the other. They are not highly correlated, so that vocational choice, which necessarily must be based upon ability, cannot be determined by interest, although there must be interest in the work to supply the incentive to achievement.

It is possible that the predictive value of interest to ability is as low as zero accompanying the first attention of babyhood

and that it increases to a correlation of not over .25 in adolescence, and increases again for the ages of this investigation to a limit of .5. The predictive value of interest to ability increases with the individual's knowledge of his ability, so long as he "faces reality," but it cannot be used as a single criterion of vocational choice and it probably has only negative significance for vocational counsel in the recognition that interest in the objects of ability is necessary for successful and satisfying achievement.

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PHYSICAL AND INTELLECTUAL TRAITS AND SOCIAL ORDERS

By P. H. Pearson

The movement for the unity school, which during the war and after was particularly powerful in Germany, led to investigations of the traditional school system with respect to its physical and psychic pressure on social ranks.

Among the findings was the claim that measurements of pupils show that boys from homes in easy circumstances are, at the age of 14, taller in stature than boys from homes of poverty. Professor Dr. Eugen Schlesinger of Strassburg made public the result of studies relative to the growth in stature of boys belonging to different ranks of society. Though his method of grouping the boys into social categories (those of the Gymnasium, the *Realschule*, the *Oberrealschule*, the *Bürgerschule*, and the *Volkschule*) is open to question, his findings were carefully deduced and significant:

1. The respective social orders to which the boys belong show greater differences of growth in stature than in weight or chest compass. So regular is the difference in height attained, after definite periods, that the records indicate almost to a certainty the social order of the pupils attending each school.

2. The more rapid growth in stature of boys belonging to the better situated class is not to be regarded as an absolute advantage, nor, on the other hand, is the greater weight of the poorer classes in comparison with their height an absolute handicap. Nevertheless, the more rapid growth in height is more nearly normal.

The difference in growth, particularly in stature, as revealed in the social groups becomes gradually more marked with the years; this difference is most pronounced in cases of general retarded development of the children contrasted. The fundamental causes of these differences must be sought in inherited peculiarities rather than in outer influences, like the better nourishment, better hygiene, and less retardation through sickness that would be expected in boys of families in easy circumstances.[1]

Data touching possible psychological differences as related to social segregation have also been sought by German educa-

[1]From *Schulgesundheitspflege*, No. 6, 1919.

tors. Some have given attention to the proportion of intellectually gifted pupils in the social orders to which they belong. Neumann claims that the Binet-Simon tests showed a relation between the child's intelligence and the social status of its parents.[2]

In their conclusions, however, the psychologists are not agreed. Superintendent Morle, of Paris, substantiated by Vaney, of the same city, did not find that the intellectuality of the children they examined was dependent on the wealth and comforts of their respective homes. But a series of tests, conducted in Paris at two schools widely different in social rank, supported the contention that such dependence did exist. Pupils in the folk school from the poor quarter of the Rue de Sambre-et-Meuse were on an average less developed in intelligence according to age than were the children of the school at Rue de Marseille, a school of comparatively well-to-do patronage. Differences in equipment and preparation of teachers in these two schools, respectively, are, however, not taken into account as possible modifications of the findings.

Important investigations have also been made by the Italian educator, Saffiotti, who rejects the property-of-parents basis in the classification of pupils. He substitutes for it an occupational basis as follows:

(1) Independent callings, such as lawyers, physicians, artists, officials, etc.; (2) industrial directors and leaders; (3) shopkeepers; (4) salespeople; (5) laborers and (6) servants.

Saffiotti finds that in the first school year the children from the independent callings show higher gifts than those of the wealthy, the industrial leaders, etc. Group 6 takes precedence over 4 and 5. In the sixth school year an unexpected reversal of ranks takes place. Groups 1, 2, and 3 come to take a lower rank than 4, 5, and 6. But the reason for this, Saffiotti points out, is the nature of the work of the school program in the sixth year; it is then mainly practical with stress on manual work with which the children from humbler homes through the occupations of their parents have become familiar.

After many modifying statements and assurances that definite conclusions are impossible Saffiotti reaches only the obvious formula that favorable social and economic conditions of the pupils' homes result in a better grade of work at school.

Even these guarded statements are criticized by Dr. O. Karstadt, who finds defects in the methods used by Saffiotti. He says that in the reports of separate investigators from different countries there is much contradiction, and that

[2] *Die Deutsche Schule*, August, 1917.

conclusions about pupils' gifts as related to social orders are unreliable.

The apparent backwardness of the poorer classes, he continues, is due to the slow start of the children examined. The claims of advantage for the higher orders are, in some cases, based on a simpler series of tests (Wolkowits); to aids (Decroly); to a confusion in ascertaining the family to which the children belonged, as in the report of Neumann. Again, Thevenot, cited in *Die Deutsche Schule* for August, 1917, finds that it is not the children of the higher social classes who appear to advantage, like those of the Brussels Private School for select patronage, but the pupils of the folk schools.

The most positive evidence of a growing intellectual differentiation between social orders in Germany comes from Dr. Hartnacke, inspector of the schools in Bremen. His conclusions together with the statistics on which they are based were made public in the *Pädagogische Zeitung* for July, 1917, and in *Monatshefte für Höhere Schulen* for May and June, 1918. He compares the percentage of pupils who failed with those who passed in the folk schools of Bremen in the spring of 1916. In the fee-charging schools, where the pupils presumably come from wealthier homes, only 2.29 per cent failed to pass the semester examinations, while of those from the free schools 7.1 per cent failed. Again, in the fee-charging schools of Bremen 36 pupils out of 836, or 4.32 per cent, received the rank I for general intelligence; while in the free schools 18 pupils out of 1403, or 1.27 per cent, received the same rank. At the fee-paying schools 60, or 7.2 per cent, received the rank II; at the free schools 23, or 1.63 per cent, received the same rank.

These unambiguous figures of Hartnacke have been criticized by Tews, Karstadt, and others on the ground that fee-charging and free schools do not mark the division line between wealth and poverty, for many ambitious parents of limited means will sacrifice enough to pay the fee necessary for their children to attend a better equipped school. But the statistics of Hartnacke have not been much invalidated by the criticism. His official position as inspector gave him access to the figures and placed him above the suspicion of juggling with them in the interest of prejudiced findings.

It is obvious that whatever tranference takes place from class to class within the social orders would work towards the condition these figures report. The best talent will rise and augment the higher, while weakness and inefficiency will drop and be absorbed by the lower.

A few of the opponents of the unity school have seen in this

line of the argument a justification for retaining the dual system, the corollary of a segregation which social laws evolve. By far the greater number of educators and politicians—and these have the popular trend with them—believe in refashioning the system so that it will give all classes an equal opportunity in the segregations that must take place. The proposed changes, having their roots in these considerations, are so far reaching that no interests of pupils, parents, or teachers are untouched by them.

MUSICAL TALENT AND THE LEFT HAND

By May Lipscomb Sikes

In teaching piano and organ for twenty-two years I have been impressed by the fact that unusually talented pupils play easily and by preference with the left hand. Moderately talented pupils play with the left hand with an ease corresponding to the right. The untalented use the left hand with difficulty, preferring the right, which is the more quickly trained.

This has no connection with "left-handedness" in ordinary matters. Ambidexterity is the goal of artistic musicianship. I am placing my observations before the public in the hope that the long road to a great art will be shortened for aspirants to musicianship by an early method of testing for talent. I always observe the left hand as a test for talent, for which I am constantly searching.

The conclusions reached in this article are the result of twenty-two years of research, with a desire to promote efficiency and eliminate any unnecessary effort. In quoting my teachers I am not stating that they held the opinion stated in the first paragraph. I did not arrive at this conclusion for several years after seeing them, and never heard it mentioned by any one until I asked the opinion of some other musicians. These have invariably said that the idea had never occurred to them, but since it is brought to their attention they have seen evidences that my theory is correct. It may lend weight to my conclusions to quote from my teacher, the great Emil Liebling of Chicago: "You have ample natural musical ability, and I am confident that you will accomplish a great deal in the art."

There are four classes of pupils: First, the talented who work; second, the untalented who work; third, the talented who do not work; fourth, the untalented who do not work. The fourth class I frankly advise to drop music and use a talent they probably have for something else. The third I prefer not to teach unless I can interest them in study, though usually I can interest a talented person. Of the second class I think there are few. I believe that any one who will work hard at music must have at least a little talent, otherwise the urge to study would be absent. This class is a pleasure. The first class is a joy and an opportunity to a conscientious teacher.

The World War has done more to develop music in America than any other one agency, as foreign opportunities are more limited than formerly, and the phonograph, radio, victrola, etc., have awakened in the masses a latent love for good music that is making many who heretofore were indifferent desire to become good performers.

I began teaching in Richmond, Virginia, when only a girl, under the supervision of the teacher under whom I graduated, Mrs. A. C. Harding, later teacher at Richmond Conservatory. Later I taught in several places in North Carolina, and assisted pupils in Chicago (Illinois) and Norfolk (Virginia). I have had pupils from China, England, Canada, Virginia, North and South Carolina, Illinois, Texas, Ohio, Florida, and other places. Have had nearly an hundred pupils besides specials, and have conducted choirs and choruses for adults and children, so my work has not been local.

In addition, I have observed pupils of my teachers already mentioned, and of my other piano teacher, Mr. F. C. Hahr, Richmond, Virginia, who taught John Powell before he went to "Leschetizky" in Europe. Further, I have closely observed pupils and graduates of Richmond Conservatory, the then Woman's College, of Richmond. Also Lenoir, Davenport, Catawba, Flora McDonald, Selem, and North Carolina College for Women, all being colleges and conservatories in North Carolina, as well as studios in Waynesville, Asheville, Charlotte, Wilmington (all in North Carolina), and Richmond and Norfolk, Virginia. I boarded with nearly an hundred music students at the Y. W. C. A., in Chicago, most of them preparing for professional work, and have observed some who studied in New York, Boston, Atlanta, New Orleans, and other places.

While I do not claim that in all these cases the talented students displayed a universal tendency for the left hand, it is a fact that those whom I observed to play most easily with the left hand and who enjoyed left-hand work most made the greatest success, while those who preferred the right hand were mediocre. This ability to use the left hand is particularly noticeable in beginners; the results show in advanced students.

I will use my children as an illustration because I have had entire charge of their musical life and can demonstrate my theories by teaching them. Said the Asheville (North Carolina) *Citizen:* "Misses Margaret and Ruth Sikes began playing the piano publicly at three years, the pipe organ at eight, and teaching at fourteen." The Asheville *Times:* "Seldom do mother and young daughters present such finished and artistic ensemble work." They began concert singing and playing

at fifteen. I began teaching them by my own method when they were three years old. And Ruth teaches successfully my little son William by the same method. As we are not entirely dependent on our efforts it has never been necessary for us to commercialize our music; and we will never be satisfied with achieving anything but the best.

They are examples of my belief that unusually talented pupils play easily and by preference with the left hand. They have never, except under compulsion, used the right hand alone; and my little boy, when told to play with one hand, invariably places his left hand on the keys.

My daughters assist me in teaching, and at my suggestion have observed the left-hand work of pupils and performers, and have seen it as I do. This is not parrot-wise, as they are capable of independent thought. I had one pupil who displayed left-hand ability, but did not progress properly, and for a time I thought my theory had found an exception; later I found that an unusual environment had made the pupil so timid as to prevent self-expression. The talent was there.

Naturally there are degrees of talent, and a moderately talented pupil, in my experience, will play as easily with the left hand as with the right. The untalented use the left hand with difficulty, and I have frequently rewritten left-hand chords because they found them too difficult to carry with the right.

I find no connection between this and ordinary left-handedness. To illustrate, I know two sisters, one of whom, right handed in the usually accepted meaning of the term, plays; the other, left handed in ordinary matters, does not. And I have seen left-handed people who were devoid of talent. It would be interesting to hear from teachers of so-called left-handed pupils, to see whether or not the case is reversed, and if the talented play more easily with the right or left hand.

A teacher in a South Carolina school told me of one of her pupils who played each hand alone, but could not correctly play them together. Evidently the brain cells controlling the hands did not co-ordinate. One teacher stated to me that she herself had small talent and could with difficulty play with the left hand. Her talent lies in expression, which she also teaches.

I have had a few pupils who could with difficulty learn to play right-hand parts (usually treble) with the right hand, and left-hand parts (usually bass) with the left. They had them "mixed." There have also been a few pupils in other teachers' experience who continually played the right-hand score with the left; and the left-hand score with the right. Evidently the brain did not function properly in telegraphing

its connection to the hands. Such unfortunates are rare, and I have never had one in my class.

I begin unusually talented children at three years; others later, from six to eight years. All are taught to use both hands from the beginning, and in a few lessons I can judge by the fluency and ease of the use of the left hand, as compared with the right, whether or not they are talented. This training leads to ambidexterity, and my trained pupils play as well with one hand as with the other.

My own brother in Richmond, Virginia, was an illustration of the reverse. So long as he played (by ear) with the right hand alone the musical sounds were fairly good, but when his left hand was added the sounds were so nerve-racking that the family dog howled.

A prominent music magazine once challenged trained musicians to equal vaudeville performers in their use of left-hand numbers, and raised the question as to why trained musicians did not play as much with the left hand alone as this class does. I attribute this to the fact that most vaudeville stars are not highly trained, and must be very talented to do any kind of musical work without good training, and of course they wish to do the thing that will startle the audience most with the least amount of work. There may be trained vaudeville players, but it has never been my pleasure to hear one; and if they are real musicians the work is only a stepping-stone to better things. As a rule, talent and ear carry them through, and their left-hand brilliancy is the result of talent and ear.

I have also found that the talented memorize left-hand parts more easily. The mediocre can memorize fairly well with the right hand, but the left is usually a poor attempt. We all know that very many people begin studying music, but few, comparatively, achieve success. Anything that would prove a good test in the beginning might save much wasted effort that the untalented could turn to a more suitable field.

To mention my daughters again, at twelve years they had little difficulty memorizing Chopin's "Valses" and Grieg, because they could memorize the left hand, often a "bugbear" to young musicians, and did not find them particularly difficult. I also think one reason why Liszt's "Rhapsodie Hongroise, No. 2," which is one of the concert numbers I prefer using, is for the very few artistically to play, is because the left-hand part can only be played and memorized by the talented. I do not consider the right hand to be above the

ability of many who cannot read, play, and memorize the "Rhapsodie" as a whole.

I hope that my organ teacher, Mr. Ernest Cosby, A. A. G. O. (Richmond, Virginia), will not object to my repeating his statement to me that in his observation all inborn organists play with fluency and ease with the feet, that this was his test of ability. Of course all good organ training leads not only to ambidexterity but to the use of all "twelve fingers," as the hands and feet are called.

I not only confirmed his opinion in my own five years of organ teaching (mostly on a modern Moller), but I also observed that my piano pupils who played most easily with the left hand did the best phrasing and pedal work with the piano pedal. The organ pupils who did not easily play with the left hand were slow and inharmonious with pedal playing. Any one who has heard Mr. Cosby, Mr. Clarence Eddy, of Chicago, or any other great organist has noticed their wonderful pedal-playing. Of course this is the result of years of work, but the ability was there to begin with.

One listening to Paderewski, Josef Hofmann, John Powell, or other great pianists, will hear and see their wonderful ambidexterity, which makes us forget performer and his instrument, and hear the music. But I distinctly remember the beautiful left-hand chords John Powell used, when at eight years of age he played "Home, Sweet Home," in the school we both attended. I also remember the school superintendent predicting for him a great future.

I have heard some good singers who could not play, not having been trained as instrumentalists, and do not know whether left-handed ability would be an invariable test for singers; but I do know that my own voice pupils who are most talented play the left-hand parts of their own accompaniments better than those who cannot learn to sing so easily, and that the latter can play the right-hand parts more easily than the left.

But there seems to be an exception in some boys who sing, due to a difference in throat tensions in male singers as related to the hands.

It would be interesting to hear the opinion of teachers of violin, 'cello, etc. The left-hand fingering of many students of these instruments in the schools and colleges already mentioned tends to confirm the theory, and we all know the left-hand fingering of great artists. This, too, is the result of training, but the genius is within them.

I have seen that all really able chorus, choir, and orchestral conductors direct with both hands. It is only the mediocre

conductor who holds a book in the left hand while "beating time" with the right. Training leads to ambidexterity in this also, and any observer of Damrosch or other great conductors has seen the wonderful use of every nerve and muscle as he calls them into play. But I believe that any inborn conductor will, in the excitement of achievement, free himself from the music and spontaneously use both hands.

If after observation other teachers find that it is the general rule that talent is displayed in the use of the left hand and the feet, then it must follow that musical talent rests in that part of the brain controlling the left hand (which is the right), and in that part controlling the feet.

WARREN COLBURN'S MENTAL ARITHMETIC

FIRST PROMULGATION OF PESTALOZZIAN METHODS THROUGH THE UNITED STATES

By Jacob W. Keller

This essay is a part of a thesis on Pestalozzi's Influence in the United States, written in partial fulfilment of the requirements for the master's degree at the Graduate School of Education at Harvard University. It is published in the Pedagogical Seminary at the request of Professor A. O. Norton, under whose direction it was prepared.

The writer, a native of the country of Pestalozzi, wishes to express his deep gratitude to Professor Norton, whose valuable suggestions and keen interest for the Swiss educator made it possible for him to investigate further the subject which in recent years has awakened a renewed attention on the part of several eminent American scholars.

I.

Significance of the Work, the Method—In the year 1821 a textbook on numberwork was published by Cummings and Hilliard in Boston which became subsequently the leading book for teaching in arithmetic in the United States. Its complete title read: "An Arithmetic on the Plan of Pestalozzi, with Some Improvements." Its author was Warren Colburn. In later years this book was generally known as Colburn's "First Lessons in Intellectual Arithmetic."[1]

"The publication of this book," says Cubberley, "marked our first adoption of Pestalozzian ideas in teaching, and was the only phase of Pestalozzianism to be adopted before 1860."[2]

The new method, which was developed in this small duodecimo volume, succeeded in making arithmetic in a short time a very popular science. While with "the old system . . . the result of calculation seemed to be obtained by some magical operation, rather than by the inductions of reason," and comparatively few applied themselves to this art, mental arithmetic was now generally studied, by girls as well as by boys.[3]

When Colburn published his arithmetic the first somewhat detailed accounts on Pestalozzi had just become known.[4] Yet in February, 1819, the editor of *The Academician*, the first and only educational periodical of that time, stated in regard to Pestalozzi's work: "This system is but little known

[1]Cf. ref. 4.

[2]Cf. Cubberley, "Public Education in the United States," p. 304.

[3]Cf. ref. 2.

[4]*The Academician* published a series of essays on Pestalozzi, 1819; John Griscom his book, "A Year in Europe," 1819.

in this country and, considering its merits, it is strange that it has not found more advocates."

This, however, began now to change. In the preface to his Arithmetic, Colburn opposes to the old system the new principles. "The common method," he says, "entirely reverses the natural process; for the pupil is expected to learn general principles before he has obtained the particular ideas of which they are composed."

With this distinctly Rousseau-Pestalozzian orientation, Colburn develops his new principles in the preface of his Arithmetic. They can be expressed in the following three main points:

1. *Proceed from the practical example to the abstract number.*

"There is no such thing as deriving practical examples from those which are abstract, unless the abstract have been first derived from those which are practical."[5] "Every step is accompanied with complete demonstration."[6]

2. *Use small examples in order to make clear the reasoning in them. The usual way is that*

"the examples are so large, that the pupil can form no conception of the numbers themselves; therefore it is impossible for him to comprehend the reasoning upon them."[7]

3. *Make the pupil discover himself the rule.*

"The pupil learns a rule, which to the man that made it, was a general principle; but with respect to *him* it is so far from it that it hardly deserves to be called even a mechanical principle."[8] "Instead of studying rules in the book, the reason of which he does not understand, the scholar makes his own rules."[9]

Colburn points out also that the numbers expressed by figures are a new language which the pupil has to learn.[10]

It must be remarked, however, that Colburn does not set forth positive propositions or, at least, does not give them a positive formulation. He limits himself to designating the "principal difficulties" in "learning arithmetic in the usual way."[11] He does not develop a constructive theory for the teaching of arithmetic. His contribution is that of the practical and intuitive teacher who is setting an example. He had a natural aversion for every kind of rule. Answering the

[5]Cf. ref. 1.
[6]Cf. ref. 2.
[7]Cf. ref. 1.
[8]Cf. ref. 1.
[9]Cf. ref. 2.
[10]Cf. ref. 1.
[11]Cf. ref. 1.

question: "What is the best mode of teaching the new system?" he says, "It may be briefly stated to be his who teaches the best . . . The method must be suited to the teacher; and the teacher again, to be successful, must adapt his method to the scholar."[12] This theory has at least the merit of being general.

There is, however, no doubt that Colburn had found for himself the way which he recommends to his colleagues. His methods were based on his own observations. He is said to have made the remark "that the pupils who were under his tuition made his Arithmetic for him: that he had only to give attention to the questions they asked, and the proper answer to be given, in order to anticipate the doubts and difficulties that would arise in the minds of other pupils."[13]

II.

Colburn's Sources—Colburn mentions only one reference which constitutes so far an authentic indication as to influences he may have suffered. This is in a footnote in the preface of the first edition of his Arithmetic. He refers there to two essays, entitled "Juvenile Studies," published in the Prize Book of the (Boston) Latin School.[14] In doing so he wants to support his assertion that children manifest usually a fondness for the science of numbers "which therefore should be among the first lessons taught to them."[15] In those essays the author tries indeed to show "that the difficulty . . . to teach this science (arithmetic) to the young . . . is not in the nature of the thing."

We find in those essays some of the most important principles adopted by Colburn, as some few extracts may demonstrate:

"Arithmetic must be taught by example."[16]

"The examples should be the most simple and familiar, involving only such terms and numbers as he (the young beginner) is already acquainted with."[17]

"He should be led from the easiest to less easy, and finally, by just gradation, to the most difficult."

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[12]Cf. ref. 2.

[13]Cf. ref. 4; the statement is quoted by Mr. Batchelder of Cambridge (p. 202).

[14]Cf. ref. 6.

[15]Cf. ref. 1.

[16]Cf. point 1, p. 163 above.

[17]Cf. point 2, p. 163 above.

"Examples should be repeated and varied till the learner can invent them for himself, and explain them to others. He will then deduce the rule,[18] and proceed with ease and satisfaction through the most complex operations and reasonings."

"In most treatises of arithmetic this method, so natural and so pleasing, is completely reversed."[19]

It will be observed that these principles are almost identical with those developed by Colburn in his preface to the first edition. Whether the author of these essays had read Pestalozzi could not be ascertained. They are, however, embodied in Pestalozzi's work.

Besides the valuable footnote in the first edition of Colburn's Arithmetic there are no traces left by the author from what other sources he might have drawn. Since Pestalozzi is mentioned on the title page, but nowhere in the "Juvenile Studies" of the Prize Book of the Latin School, Colburn must have had access to Pestalozzian ideas in another way.

In the year 1819 *The Academician*[20] published a series of essays, written by an anonymous writer, "A Native from Clinton County," who proves to be thoroughly informed as to Pestalozzi's work. A book, published in Dublin,[21] entitled "Pestalozzi's Intuitive Relations of Numbers," and the publication of an article in *The Academician*, entitled "Pestalozzi's Method of Teaching Religious and Moral Principles," induced the writer to his contribution.

It is quite possible that, while in college, Colburn had read the articles of *The Academician*. For they constituted one of the rare sources of Pestalozzi's labors available in this country. Furthermore, this periodical offered in a special "Arithmetical and Mathematical Department" articles from which Colburn could have derived many other valuable suggestions. Whatever may be the case as to *The Academician*, for Colburn it was not the only avenue to Pestalozzi.

There were, so far, two conceptions as to Pestalozzi's influence on Colburn. One is represented by *Barnard's Journal*, believing that "Colburn's indebtedness to Pestalozzi has been misunderstood and overrated."[22] The other one is represented by Cubberley who emphasizes that "the publication of his book (Colburn's) marked our first adoption of Pestalozzian ideas in teaching."[23]

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[18]Cf. point 3, p. 163 above.
[19]Cf. 2nd alinea, p. 163 above ("This, however, began . . . .")
[20]Cf. ref. 5.
[21]1817.
[22]Cf. ref. 4.
[23]Cf. Cubberley, "Publ. Educ. in the U. S.," p. 304, edit. 1919.

It is a curious fact that Colburn himself does not mention Pestalozzi in his preface. Neither in the Key of his Arithmetic nor in subsequent writings does the name of Pestalozzi or of any other reformer appear. What he has to say is given as his own. This fact explains the belief of his friends that he originated the method which gave rise to the great change in teaching arithmetic. On the other hand there is no evidence as to what facts induce Cubberley to believe that Colburn had adopted Pestalozzian ideas, if not the descriptive title of the book and the different type of problems used there for the first time. And yet there can be no longer doubts that Colburn derived substantial suggestions from Pestalozzi, since it must be considered as certain that he not only knew Neef's "Sketch of a Plan of Education," but adopted also an essential feature of the Pestalozzian system from Neef.[24]

This assertion that Colburn knew Neef's book becomes evident from the very beginning of the preface in Colburn's Arithmetic which reads as follows:

"As soon as a child begins to use his senses, nature continually presents to his eyes a variety of objects; and one of the first properties, which he discovers, is the relation of number."

Neef begins his paragraph two, of "Numbers and Calculation," thus:

"From the moment a child learns to make the first use of its nerves, nature presents, unceasingly, to its eyes, a variety of objects; from which, at a very early period of its existence, it abstracts the notions of unity and plurality."

A comparison of these two sentences shows not only an almost complete accordance of the substance of thought but also a surprising parallelism of construction and partly even the same wording. It is evident that Colburn aimed at a purified English expression of the same sentence.

There is another and still more conclusive evidence that Colburn derived aid from Neef's work. Colburn gives at the end of his Arithmetic three plates, to the explanation and

[24]Joseph Neef was a teacher at Pestalozzi's institute in Burgdorf near Berne. He was brought to America by Wm. Maclure, an American philanthropist, in order to introduce Pestalozzian methods of teaching into the American schools. He opened, 1809, a school at the Falls of the Schuylkill, near Philadelphia. Neef, however, failed to exert the expected influence, partly on account of the Lancasterian system which just then began to sweep over the new world and met with the favor of the builders of the nation, partly on account of his own personal inclinations which favored the retired life of an unknown schoolmaster. In 1808 Neef published his program-book "Sketch of a Plan and Method of Education."

application of which a considerable part of the Key is devoted. Now these three plates or "tables" are an exact execution of the description which Neef gives of them. And also the corresponding exercises of the Key are suggested by Neef.

On page 18 of his "Sketch," Neef writes: "Now it will be time to produce Pestalozzi's first table."

"This table contains ten horizontal rows of rectangles, each row including, likewise, ten rectangles. Each rectangle, contained in the first or superior row, contains one space, long and broad enough to be distinctly perceived at a reasonable distance. This first row is, consequently, nothing else but a faithful representation of our ten fingers, our first arithmetical instructors."[25]

"In the second row, each rectangle contains two traits (strokes). The rectangles of the third row, contain each of them three spaces. Thus, in each succeeding row, the rectangles contain one space more than those of the preceding row. The tenth and last row includes one hundred spaces, each of its rectangles comprehending ten spaces.

"This short description, I trust, will enable my readers not only to understand our future operations, but even, if they chuse, to construct the whole table themselves."[26]

One of those who chose to follow these instructions was evidently Colburn. He describes his "Plate I" in the following way:[27]

"This plate, viewed horizontally, presents ten rows of rectangles, and in each row ten rectangles. In the first row, each rectangle contains one mark, each mark representing unity or one. In the second row each rectangle contains two marks, in the third, three marks, etc."

Colburn reproduces also the two other plates exactly according to the description given by Neef.

"This second table," writes Neef[28], "constitutes ten ranges of squares; each range including ten, and consequently the whole table one hundred squares. The squares of the first or superior range are undivided, each of them represents, therefore, a whole. In the second range each square is divided into two equal parts; each of those parts represents consequently one half. In the third range, and by the means of an analogous division, the thirds are exhibited to the view. The fourths are to be found in the fourth range. The squares of the succeeding ranges are successively divided into fifths, sixths, sevenths, eighths, ninths, and tenths.

"What constitutes the main difference between this latter and the preceding table, is that it exhibits each unit as divisible and divided,

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[25]It seems that Neef left the spaces of the first row empty, or "space" is used as synomym to "trait" (Lat. *spatium*).

[26]Cf. rf. 3. Compare also Cubberley, "Publ. Educ. in the U. S.," p. 303 (that Number Chart is obviously taken from Kruesi, Herman, Jr., "Pestalozzi, His Life, Work and Influence." 1875, New York).

[27]Cf. ref. 1, p. 110.

[28]Cf. ref. 3, p. 30.

whereas in our first table each unit was represented in a state of indivisibility."

Colburn follows exactly this description, departing from the rectangular form of the boxes of the first plate to squares. With extra heavy lines he endeavors to represent each square as a unit, a divisible surface. "Plate I," he says,[29] "presents each unit as a simple object and undivided. Plate II presents the units as divisible objects, the different fractions of which form parts, and sums of parts of unity."

Compare the following description of this plate, given by Colburn, with that of Neef:

"This plate is divided into ten rows of equal squares, and each row into ten squares. The first row is composed of ten empty squares, which are to be represented to the pupil as entire units. The second row presents squares, each divided into two equal parts by a vertical line; each of these parts of course represents one half. In the third row, each square is divided into three equal parts, by two vertical lines, each part representing one third, etc., to the tenth row, which is divided into ten equal parts, each part representing one tenth of unity."

The third table is executed on the same basis as the second. It presents the divisions of the parts. Accordingly the second square of each row is subdivided into two parts by a horizontal line, the third square into three parts by two horizontal lines, and so on. Here again Colburn follows the exact description as given by Neef.

The execution of the three plates in the same way and sequence and in its numerical limitation to three, as suggested by Neef, needs no further comment. The source is evident.

That Colburn did not invent them himself is obvious also from his lecture given before the American Institute of Instruction in 1830. He said:[30] "It has often been asked whether the plates which sometimes accompany Colburn's Intellectual Arithmetic, or anything else of a similar nature, are of any use to the learner?" And he concedes, "I think myself that they have very little effect upon his progress. At first, before he is familiar with the addition and multiplication tables, some kind of counters seem to be necessary; but it is not important what they are. The plates are very convenient, but I believe the fingers do about as well as anything." It is scarcely conceivable that Colburn would have abandoned such an essential feature of his Arithmetic if it had been the result of his own thinking.

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[29]Cf. ref. 1, p. 129.

[30]Cf. ref. 2.

This passage has yet another significance. It shows that Colburn wanted to emancipate his Arithmetic. Its success was established and was his. He no longer needed any decorative equipment or sponsorship. In spite of the obvious fact that Colburn was influenced by Pestalozzi directly and indirectly (indirectly in "Juvenile Studies"), and that meanwhile Pestalozzi's name and fame became finally established in America, Colburn disowns throughout his later career the name of the master which he put on the front page of his first publication. In his important address to the American Institute of Instruction in 1830 he opposes simply his "new system" to the "old system," and it was understood that he originated it.

III.

Colburn and Carter—Much light on Colburn's attitude towards Pestalozzi is thrown by one of James G. Carter's "Letters to the Hon. William Prescott on the Free Schools of New England, with Remarks upon Principles of Instruction."

In letter six Carter discusses Colburn's Arithmetic, on the whole with much regard for Colburn. The following passage is however significant:

> "Waiving here the question of independent authorship, which Mr. Colburn might with some propriety claim, I shall enter at once into an examination of the general principles of the system; it being a much more interesting question, *what* the system is, than *whose* it is."

The important allusion, that it might be questioned whether Colburn was an independent author, deserves mention because it confirms the belief that at least a very vivid controversy on this subject had been aroused. It explains also, to some extent, why Colburn avoided in his later editions any reference to Pestalozzi.

Carter gives then in a footnote an account of Pestalozzi and his ideas "to enable readers to judge how far Mr. Colburn is indebted to him for his system of Arithmetick." He comes to the conclusion that "he (Colburn) has adopted the arrangement of Pestalozzi in some of the combinations, but he has rejected it in others, and developed all by the selection and composition of examples, in which he derived no assistance from him . . . Mr. Colburn with hints from him, has applied the same method to teaching the same subject, but in a manner somewhat peculiar to himself."

Mr. Carter, however, had his hobby, and this was Francis Bacon. He related all modern human thought to him, and

he did not fail to consider Pestalozzi as a mere reflection of Bacon, not seeing that two centuries lay between these two men and philosophers like Locke, Leibnitz, Comenius, Descartes, Rousseau. It will, therefore, not surprise if Carter goes so far as to say: "It would, perhaps, be better, if Mr. Colburn would say at once, 'Arithmetic upon the plan of Bacon,' rather than adopt any name which can only reflect what it has received from him."

In connection with what has been said in the previous paragraph about Colburn's plates and their final disavowal by Colburn himself before the American Institute of Instruction, it is interesting to note Carter's attitude in regard to these plates. "I think them of at least doubtful utility," he says, but has to admit that he has not been able to test this part of the system by experience and that he has therefore "to pronounce upon it with more hesitation."

There can be no doubt that the criticism made by Carter in his distinguished "Letters to Prescott" has influenced Colburn's subsequent attitude to a large extent.

IV.

Conclusion—No phase of Pestalozzi's work met with such a universal approbation and adoption as his method of teaching arithmetic. It meant a complete, almost revolutionary change in the instruction of this subject. Though Pestalozzi had made it a part of a more comprehensive system, arithmetic was particularly the revelation abroad, perhaps because the results were more easily accessible to exact control, perhaps because there were no inherent language barriers. In a country as adjacent as France, Madame de Staël had to remind her nation: "*On aurait tort si l'on croyait en France qu'il n'y a rien de bon à prendre dans l'école de Pestalozzi que sa méthode rapide pour apprendre à calculer.*"[31]

It is therefore not so surprising that arithmetic was the only phase of Pestalozzianism in the United States to be widely adopted before 1860. By the popularity of the system it broke into every country. The echoes were so strong that they hardly could be distinguished from the voice that produced them. Colburn was one rock who caught the sound, impressed it with his own personality, and voiced it to be heard in the whole new world.

It little matters that Colburn did not study Pestalozzi intensively nor extensively, that oftentimes he points only

[31] "De l'Allemagne," 1810.

to ideas which with Pestalozzi were grown out to more mature principles. As an eminently intuitive and practical character he applies tacitly the new system and sets for generations an example.

So he finds himself, almost at once, a reformer and a famous man. Why should not he, in a world of its own, be also the prophet? With satisfaction and filial pride, his son could state in the New Edition of 1858: "Ideas which were new at the first publication of this work have now, through the 'great change' that has taken place in elementary instruction in arithmetic, through its influence, become the common possession of all intelligent teachers."

The significance of Colburn in the history of teaching can not be lessened, if a careful analysis of his work confirms, as a whole, the epithet of his first publication: "On the Plan of Pestalozzi."

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GENIUS. WHAT IS IT? CAN IT BE ANTICIPATED?

By Kimball Young

One of the prevalent interests of educational psychologists in view of the progress made in the field of mental measurement is the detection of gifted children in our schools and their placement, in terms of high average ability and talent, in "Opportunity Rooms" with special provision for pedagogical progress. If we can predict the incipiency of genius in any way we shall have made a forward step in dealing with the complex problem of leadership and progress. While the writer is sympathetic with the present attempts to select those children from our midst who are especially gifted, he wishes to call attention to the immensely difficult task of predetermining genius.

What is genius? What is greatness? How are they measured? How determined in the forecast, when we have such difficulty even now with settling the matter in retrospect? The determination of greatness in men is one of the most difficult if not futile tasks. The change in attitude and interpretation of genius from age to age is endless. In the age of Pope and Dryden, Shakespeare was not highly regarded, but with the rise of nineteenth century Romanticism, matters were reversed. A recent writer has solemnly informed us that Dante is on the wane. There are prevalent critics whose view of world literature is so narrow that they compare rather mediocre modern realism to the great masterpieces of stable literature. It simply cannot be done. We are living too near our contemporaries to make any but gratuitous guesses on their ultimate position in culture.

Likewise the standing of inventors and scientific discoverers varies from age to age. What seems a tremendous contribution today may finally prove to be but a forerunner to some more significant thing. It is rather a commonplace that the greatness of statesmen and military leaders waxes and wanes with the rise and fall of nations and the trend of interest in history.

The matter, then, becomes one of a criterion of greatness. Furthermore, to get orientation one may ask: Should we strive for a standard of measurement at all? Do we not delude ourselves in trying to set up some system of scoring off genius? Is not such an attempt the expression of an attitude inherited from the medieval belief in absolutes? After all, will it not

resolve itself into a useless effort to reduce, once more, the world to static classifications and neatly packed finalities?

The answer to these queries is evident in a number of considerations: First of all, greatness is not one piece of cloth. For instance, the older school histories on which most of us were nursed paraded before us the deeds of the great ones from Tiglath-Pileser, Darius and Cyrus down through Alexander the Great (note the title), Caesar, Charlemagne, through the Middle Ages and modern times to our own Civil War and the might of Bismarck and Von Moltke. Today one is apt to find in the "new history" much more emphasis put upon discoverers, inventors, scientists, philosophers and contributors to culture than to the heroes of the Ranke school. Man makes gods and heroes in the shape of his most insistent values. In the past the emphasis was on warfare, struggle and conquest which have marked so much of Occidental history. To the Brahmin other values, certainly, would be emphasized. Merit in the field of literature, art, music, has likely enough different roots, both in history and in the individual, than renown in the field of the military or the political.

Granted that genius is a complex matter, not a single feature of civilization, what are some considerations necessary to answer the question of its predetermination, its prognosis?

It is evident to all readers of history that accident, especially in critical periods, has played no small part in the course of history and the production of great men. We are all familiar with the old controversy whether men make their times or the times make men, whether men are really ever born "out of their time" or not. To accept the full thesis of the "Great Men" theory of history is too particularistic for consideration. The opposite theory is quite as faulty, when taken alone. The case of John Davidson is in point. Few persons yet appreciate the place he occupied in the Neo-Romantic movement of the eighteen-nineties. There seems to be little evidence that he paraphrased Nietzsche, and his personal influence on his contemporaries as well as the importance of his verse and prose is not yet recognized. It takes the perspective of time to judge men. The universal case of Tennyson and Browning needs no comment. Configuration of circumstances, the run of attention in the cultured classes as well as the masses, these are pertinent factors in a man's rating. Is not genius after all a purely subjective concept? Can it or should it assume objectiveness as a scientific concept or discovery may?

The chance elements in alleged fame are evident in the

passing popular heroes. Few would accord these men seats in the halls of cultural fame, but their cases illustrate the point. One recalls how Vice-President Coolidge rode into the limelight on the false reputation of the Boston police strike, how Mayor Ole Hansen became a hero to all the security leagues and conservatives in this country by his mythical suppression and defeat of the alleged general strike in Seattle. The long-sought duplication of Hansen-heroism by the neighboring mayor in Portland, Oregon, came to naught (Cf. *Nation*, Dec. 6, 1922), which illustrates the importance of events turning up at the moment of public focus. In the heyday of Mitchell Palmer, Coolidge and Hansen reached their brief glory quickly. Mayor Baker holloed "Wolf, wolf!" when the public sentiment was quite content with other dangers.

The reader will pardon these banal examples, but they illustrate, by analogy, what frequently happens, over a longer time, with "geniuses" in the fields of history. The run of public attention, especially the interest of the prestige-bearing individuals of a period, has much to do with the recognition which a man and his work receive.

At the other pole from the matters of culture, run of interest and chance configuration of circumstances are the factors of individual differences. The personalities who produce works of art and science, who become great wielders of men and events, possess an integration of intellectual traits—keenness of perception, critical judgment, insight, special talents, with emotional characteristics—drives, persistences and even eccentricites, for greatness seems "to madness near allied." In addition to these is the matter of sheer physical vitality, with possible importance of endocrine glands. One recalls, however, the numberless examples of men of poor physical vigor who have made outstanding contributions to culture; hence one best avoid laying too great stress here, but rather on the first two: intellect, and emotional (will and feeling) features.

Coming to look at the formative influences making for genius we must take into account, therefore, the cultural level of the group, the run of attention of the group—that is, the values and types of behavior which possess the prestige and value of the time, and the individual capacity. An interrelation of these three is necessary to the study of genius either in the bud, the bloom or the fruitage. The fourth factor, accident, is quite beyond our control. Take the case of some of these children whom the psychologists are studying. What is the effect of the subtle influence of books, art, music,

fine manners and high-grade conversation upon the growing boy and girl? What is the influence of the ambition set up for the family by tradition: a powerful force, we must be sure, in the cases which Mr. Galton studied in his attempt to segregate the factors that made for hereditary genius. True, the ordinary measurer of intelligence may laugh at these incommensurables, since what does not reduce itself to quantities has no interest for him. But their very subtlety is what baffles us and should engage our insistent attention. It is just the attack on such elusive difficulties which marks the progress of science.

There come to mind two cases of contrasted environment surrounding children of high ability, as measured by a large number of psychological tests of all kinds, not alone mere tests of intelligence. One is a family of wealth, social position and every appointment of luxury. The two children here, a boy and a girl, are surrounded with excellent opportunities for intellectual achievement; travel, initiative and tutorage are offered them without stint. On the East Side of this same city of three-quarters of a million, lives a Jewish boy with his widowed mother, who is marked for his all-round ability and his special aptitude for music. The life of this boy has been one of hardship from beginning to end. During his elementary and high school days he has assisted his mother in making a livelihood besides carrying a full program of studies and working at his music for hours at a time, day after day. Yet this boy, in spite of handicaps of poverty, has been surrounded by an atmosphere of cultural ideas and ambitions. He reads German, Yiddish and Russian with ease, at fourteen had already developed the intense critical attitude and breadth of interest that mark an enlightened adult. His problem is obvious. Can he survive the pressure of economic servitude and growing ill-health? What does he lose by being denied the leisure of his contemporary of the West End?

This instance raises a valid question for all those who are interested in artificial stimulation of gifted children. What is the effect of repression upon the production of genius? The issue is very neatly balanced. One might write a legitimate defence of the social and individual value of at least mild repression and some hardship. Will the children of the family of wealth produce the results which they might, had they to strive a bit harder for their aims? Will the heavy pressure of economic forces either destroy the health of the Jewish musician or serve as an additional goad to push him to a prominent place in the musical world? Is there not a danger in making the path of the gifted child too smooth and

too easy? A danger in too much support? One wonders whether John Davidson would have written any better or more significantly had the streets of his London flowed with milk and honey.

The upshot of the matter is its complexity. One questions how far the psychologists can go in their program of prognostication. Greatness has a manifold origin. The criteria are decidedly personal, subjective and various. A man's reputation is, after all, outside his own hands. Genius is so largely a matter of cultural relativity. As we said above, can it, should it, be reduced to objective standards?

In consequence of these considerations, although it may be worth while to investigate the intelligence ratings of children with a view to better classification in terms of ability and pedagogical progress, and especially useful to know the oncoming indications of special talent, as in music, drawing, mathematics or literature, it must not be imagined either that we are possessed of adequate tools to predict these matters throughout or that the nature of genius is so simple that it can be written in the formulae of two variables: intellect and emotional traits now determinable. Greatness or genius is a shifting, unsatisfactory term in history. The universe is not so fixed and formal that the seeds of genius can now be detected with much accuracy. There is great likelihood that the "Probable Error" of predicability will turn out to be exceptionally large. Nature has a curious way of turning neat tricks on men's designs.

BOOK NOTES

Modern Development in Educational Practice. By JOHN ADAMS. London, University of London Press, Ltd., 1922. 202 p.

This book by an able conservative leader of educational thought in Great Britain, mature enough to have retired, is one of the most interesting volumes on Education we have seen for years, and should be read by every one in this country who aspires to any degree of independence of thought or activity in this field. This veteran finds one trend underlying all the new movements he discusses, viz., toward what the author of this review long ago called a change from the scholiocentric to the paidocentric point of view. So impressed is he by this movement that he even adopts the latter word, although with a grimace, and it is remarkable how far this retired pedagogue goes in welcoming successively: mental tests, scales of attainment, the knell of class teaching, the Dalton plan, the Gary contribution, the play way, the project method, free discipline, and even psychoanalysis in education. Few American educators have read so widely, so well, and in such an up-to-date way, and I can think of none of them who have even attempted to discuss so broadly and impartially the above themes which are now the most vital ones in this domain. It is interesting, too, to note that most of the movements and the authors he names are American and not British; but none of the guild here have this author's perspective or frankness, which latter may be due to the fact that he is enjoying the freedom that only retirement can give and also an Indian summer of argumented mental alertness.

It is hard to give an adequate conception of such a book The author is confused by the adjective "new" now applied to so many things from theology to education and even to children. This is indeed in a sense the children's age. Because the school is hard on health of both body and soul we must do more than ever to counteract its influence. Our educational system is not so much evolved as congealed. The curse of examinations in Britain is the chief obstacle to progress; it should be superseded by inspection. Schools must not be mere knowledge-shops or teachers mere information-mongers. Laurie goes too far in recommending "the advantages of the gutter" to children of the rich, but education is adjustment.

As to standards and mental tests made scientific by Pearson, it is possible to know mathematically the relation in boys between ability, *e. g.*, in Latin and in mathematics; and correlations are the first values sought. We shall never be able to define intelligence, nor is it anywhere near so important as character Tests are not, however, to be regarded with awe as magical. The intelligence test can never supersede that of examinations, nor can we separate capacity from attainment because we cannot test *in vacuo.* Binet and Terman whose system is described at length, are on the whole commended, but the I. Q. has only a limited value; and teachers' estimates must not be undervalued, while the moral tests which are really the most important would be objected to by parents. In higher classes the teachers' estimates and marks agree far more closely with the intelligence tests; divergencies between the two are really due to the fact that the teachers' estimates are influenced by far wider considerations.

The author, too, has a high appreciation of some of the scales of attainment, but has very judicious remarks on the imperfections of these scales. He recognizes that there is a psychology of the class which is important, but that the knell of class teaching has sounded. In the Dalton plan the teachers give up their function and become advisers who keep regular

hours in certain classrooms where they can be consulted. No scheme capitulates so completely to the child; and yet the author has some sympathy with this method, although we believe he gives it too great prominence. The same is true of the Gary contribution, or the work-play-study schools with their departmental methods, although he has keen sympathy with the co-ordination these schools can effect with the activities of the community in certain favored localities. He also commends the auditorium features. He admits that the play way has great advantages and would utilize interest to the uttermost but insists that nothing serious can be accomplished without a core of really hard and serious work.

As to the project method it enables pupils to get a clear idea of why they do certain things in schools—clever boys love problems—it introduces the human element; it makes a new approach between the school and the outside world, and goes very far toward sacrificing the curriculum to the child. It is simply a step farther in the subjection of the logical to the genetic method, an antithesis which child study was the first to bring into prominence years ago. According to the project method applications precede principles. Projects take pupils out beyond the school walls. The old idea was to give principles and teaching to apply them, but the new scheme leaves the pupils to evolve the principles for themselves, and that largely outside the school. Thus the evil of over-systematization is avoided. The danger of the project system is that it does not integrate or synthetize enough. It does, however, break down water-tight compartments between subjects and brings in a wider correlation. It is dreaded because it seems to throw all subjects into a common pool, but the projectors insist that it will end in arousing such interest that more attention will be paid to special subjects. It certainly often vitalizes them and substitutes a psychological for a philosophical method. It is not unpedagogic to begin with uses and practical applications. This method makes the teacher more interested in the pupil than in the subject, and this makes fact become faculty. "Better English week" is described and commended.

As to psychoanalysis the writer is evidently generally influenced by Pfister. He does not believe that teachers must themselves be analyzed nor that normal pupils should, but he insists that all should know the rudiments of psychoanalysis because it reveals the unconscious instinctive side of life. It only carries out certain further aspects of child study and is, on the whole, to be commended.

Finally, too much free discipline is fraught with dangers, because the life of the community always involves certain restraints. Strong-willed parents have weak-willed children, and if the parents have no will that of their children is liable to be perverted.

Life of Christ. By GIOVANNI PAPINI. Freely translated from the Italian by Dorothy Canfield Fisher. New York, Harcourt, Brace & Co., 1923. 416 p.

This new life of the Great Teacher must be of peculiar interest to all those who care for the higher pedagogy. That it has made a wonderful appeal is shown by the fact that 70,000 copies have been sold in Italy, and that it has been translated into fourteen languages. It is indeed, a most unique and appealing book. The author is still in the prime of life, is one of the most eminent men of letters in Italy, and the literary style of this book surpasses that of any of his previous writings with which we are acquainted He would have us understand that it marks his own conversion, for previously he was a free-thinker and a great admirer of Nietzche, whom he had eulogized as a "saint," although, as is well known, he is of all writers ancient or modern the arch enemy of Christ. In Italy, as in other Latin countries where Protestantism is undeveloped, there

is no half-way house between Rome and reason. No one can deny that the author's theme has greatly improved his style and affectiveness as a writer, marked as these were before. He scorns both the higher critics, none of whom save Renan he even mentions by name, and boasts that his volume contains no footnotes; is equally scornful of all pious books for the pious, in short of all previous lives of Christ. He evidently felt like Dante, who wished to write a book of a kind that no man ever even tried to write before; and in this he has succeeded. Everything according to the four Gospels for him is not only literally and physically true, but all criticism is impious.

In his introduction he says that free spirits have been trying to kill Jesus a second time, viz., in the hearts of men. These are "preposterous donkeys mistaking libraries for their stables." Some think Jesus a plagiarist, some a myth, but deep as is the grave they have dug for Him they cannot bury Him. "There is still a passion for love of Christ as well as a passion for His destruction." . . . "There never was a time more cut off from Christ than ours, nor one that needed Him more." He must be reinstated. Lives of Him written for the pious are "withered mummies." They have a "smell of stale incense and of rancid oil that sticks in the throat." The critical books try to find the man in the God instead of the God in the man. In passing from the one class to the other "we fall from pietistic boredom into sterile confusion." The one fails to lead men to Christ, the other loses Him. The author boasts that his history is not scientific because he lacks the learning to make it so, and also because he would not do so if he could. His work was written in the country far from books, but he wishes to startle men. He confesses to taking much liberty with the chronological order of events, and to seeking mainly to edify his readers. In a word, he treats his theme as an artist or a poet, for whom "everything is of equal value and omnipresent, and all history is sacred history." Indeed he admits that after six years of great travail of soul he has written this book in a sense as an expiation for the guilt of his earlier wanderings from the fold, and thinks hate a better foundation of love than indifference.

After this introduction he proceeds to describe the life of Jesus, not from the Annunciation, but from His birth to His ascension into Heaven, with all the vividness and dramatic detail of which he is capable, making the freest possible use of poetic license, and nowhere raising any question of the historicity of any of the miracles, even the resurrection of Lazarus and of Himself Throughout there are long quotations, not only from the Gospels but from the Epistles and from the Old Testament; and some incidents and parables, *e. g.*, the prodigal son, are dwelt upon at great length and with a veritable genius for descriptive efficacy. Everything is given a setting in time, place, or both, with a view to the maximal literary effect; and so successful is the author in the more amplified passages that he stirs the emotion of the reader sometimes to their depths. It is the spirit of the Oberammergau Passion Play throughout. When one sees "Hamlet" or "William Tell" well presented on the stage it seems heartless and cold-blooded to remember that these heroes never existed, and so throughout this book the critical spirit seems almost impertinent.

The writer of this review has been carried away by the vivid descriptive sermons of John Jasper, and in reading his sermon "De Sun Do Move," which Mr. Hatcher has reproduced, we revert to a pre-Copernican age and forget modern astronomy. Perhaps we find the secret of this method in a brief essay of Papini's published years before in praise of the pragmatism of the English philosopher, Schiller, for this justifies the standpoint that the truth is whatever works well; and to this precept Papini yields with utter abandon. The most effective truth is that which conforms most exactly to our strongest wishes.

The author waxes warmest in his defence of Jesus' contempt for wealth, and through more than a score of pages praises poverty as the only way to salvation. On his comments on turning the other cheek, too, he might be said almost to outdo Jesus in preaching the doctrine of non-resistance to evil. In both these matters he goes so far that, however bad form it may be, the reader cannot and will not refrain from asking whether the author himself practises these precepts, and what use he will make of the large profits accruing from his book. Indeed, with this method, the author's clientele will await with great expectation a further volume he promises upon "The Life and Traits of Mary, the Mother of God."

It would not be fair to call this book sensational or even sentimental, as the latter term might be applied to Rénan's famous "Vie de Jesu," but it certainly is a literary achievement of very high merit; and it is of special interest to the psychologist that this brilliant and radical writer, near the close of his fourth decennium—when ripe manhood begins to look forward to old age, and when so many others (Ruskin, Comte, Mill, Swedenborg, Strindberg and Tolstoi) have undergone a most marked intellectual metamorphosis—has given us such a striking example of the phenomena that attend the mysterious early dawn of the climacteric. But was it necessary to burn all the old gods? Why disparage Socrates, Buddha, philosophy and science, in order to exalt Jesus on the ruins of all other systems? Much of this book might well have been written in stately hexameters. The author is certainly often carried away by his theme like Ion, the Platonic rhapsodist, who told of his physical symptoms when reciting great passages from Homer. This is art, and brings an afflatus which carries the reader or hearer along whether he be skeptic or pietist. It is indeed edifying, and every human soul that reads this book will be thrilled and lifted by many of its passages perhaps to heights unknown before. He will feel for the moment that beauty and sublimity are greater than truth; and perhaps they are, for the heart is older than the head. The hedonic narcosis has its own view, and is not only no blood relative but often proudly refuses to recognize the cool-headed Muse of truth. Scientific students in this field will get no scintilla of help or even suggestion from this book, for it moves in a totally different sphere; so that they can ignore Papini as completely as he does them.

What is truth? Is it literary and objective historicity? If so, we can never know Christ completely; the record is too fragmentary and the proofs of the supernatural elements can never satisfy canons of either history or logic. This being the case, is it justifiable for edification purposes to pretend or assume it, and evict or silence cool-headed reason? Is Baldwin right that beauty is a higher criterion of affirmation than either goodness or truth in the above sense? If so, Papini is right, for he certainly gives us a moving and spiritual ideal. When Omar died his followers appeared at the door of the tent, swore he was still alive, and threatened with the sword all who denied it; and this was pragmatically true because it saved the great situation. Jesus lives in the hearts of men whether reason denies or accepts Him, and to our thinking he lives thus in the souls of far more of his followers today than Papini admits. In our opinion his work would have been far more convincing if he had been more of a psychologist and not only recognized but proclaimed the fact that after two thousand years it would make no practical difference, or rather would probably be the greatest misfortune that could befall Christendom, if the world had just come into possession of the photographic reproduction of all Jesus did and a phonographic record of all he said. It is the idealization of the fragmentary records of his life and sayings that is precious, and it is because psychology is now in a position to recognize these intangible psychic forces in Christianity that makes a new evaluation of Jesus possible which cannot only

edify but carries new and profound convictions home to the hearts of intelligent people and even skeptics; and of these deeper psychological forces, which the present writer has tried to show in his own treatment of Jesus, Papini knows little, and for them he has only scorn

Finally this remarkable book is, in a sense, a product of the *Zeitgeist*. It is psychologically akin to fundamentalism as lately developed in this country. Indeed the fundamentalists would find much in its later sections quite in harmony with their ideas. They, too, are literalists even as to the Book of Revelations; both believe in a speedy return of our Lord. We think, in another edition that Papini should familiarize himself, and come to terms, which he has not fully done, with their tenets. Both believe that there are today very few true followers of Christ in the world. Both are pragmatists consciously or unconsciously, and believe that that is true which edifies. Both care little for consistency and will have nothing to do with evolution. Great wars have often been followed by great revivals of interest in religion where sometimes it seemed as if the *credo quia absurdum* is proved to run riot. There is a passion for great and supreme affirmations; the excitement and tension of war need to express itself in new terms, and the crassest kinds of superstitions often arise, *e. g.*, spiritism; and a scientific spirit which must often rest in suspense is hard. Thus, this book is timely in a unique sense. All doubt is banished from the Christian world. Skepticism and further enquiry have no place, and we are brought nearer than ever before to the age of faith in which the Gospels originated.

A Short History of Christianity. Tr. from the French of Salomon Reinach by Florence Simmons. New York & London. G. P. Putnam, 1922. 227 p.

Reinach regards Christianity as "a purely human institution, but it is the greatest of all not excepting Buddhism because it suits the temper of progressive and laborious nations and adapts itself to the most varied conditions of society." . . . "Christianity, while opposing a veto to unbridled superstition, has taught and teaches the world the only moral lesson accessible to everyone, thus preserving and propogating the most enduring elements of Hebrew and Hellenic wisdom, and cleansing and softening the animal instincts of the human race. If those gospel lessons, though preached to thousands of millions for twenty centuries, have not yet been assimilated by mankind, they have at least acted as a permanent antidote against egotism and cruelty." Its beneficent influence is of the future as well as of the past. Thus Reinach considers himself a Christian, although he doubts everything supernatural, and says "the churches insist that the legends of Christianity are pure history; if this were so it would be the greatest of miracles." What he calls the "myth of Christ" which can be traced "from the time of St. Paul" is very different from the history of Jesus. None of the gospels are the work of eye-witnesses. We may assume thus "a pious fraud." He agrees with Loisy that "to allege that the earliest testimony as to the origin of the gospels is certain, precise, traditional and historical is to falsify its character entirely; it is on the contrary hypothetical, vague, legendary and partisan." The fourth Gospel is not the work of St. John, nor of a contemporary. The Gospels do not complete but contradict and repeat each other. They reflect "a legendary and expository labor carried on for at least forty years." John "has no historic value." "The doctrine of sin and justification is absent from the teaching of Christ in the Gospels." The passages teaching redemption in the Gospels are interpolations and were made under the influence of Paul. Thus the accepted idea of the Resurrection knew it as a "pious belief and not as an historic fact." "The historic Jesus is essentially intangible, by which I do not mean that he never existed, but

simply that we cannot affirm anything precise about him, lacking as we do all evidence incontestably derived from those who saw and heard him."

The author then proceeds to give a very condensed sketch of Christianity down to and including Modernism. This point of view is thus the very latest exposition of the results of generations of critical scientific study. Historicity has to a great extent evaporated. There is nothing miraculous in the current conception of that term in the life of Jesus or in that of his followers, and yet Christianity is conceived as perhaps the most real and precious thing in history with a great future before and a great organization beyond it.

What greater contrast could there be between this method and standpoint and that of Papini, and can they ever be reconciled by calling the latter the pedagogical and the former the scientific point of view? To our thinking such a contrast demands the most careful consideration and presses upon us the whole problem of pragmatism. Or shall we say that Papini is for the teacher and Reinach for the scholar?

Anger: Its Religious and Moral Significance. By G. M. STRATTON. Macmillan Company, 1923. 277 p.

The emotions have been feared and dreaded by psychologists as disturbers of the intellect, as in the Bureau of Standards the meter must be watched through a telescope lest the heat of the body expand it. Happily this time is passing, and psychology is beginning to study, not only instincts, but the emotions themselves. The first fruits of this study are in the realm of morals, revealing the roots of good and evil, but religion has longest worked upon the feelings. There is a sense in which they underly even intellectual activities, and many, if not most, ideas can be traced to underlying feelings, even the desire for consistency. Darwin started, James and Lange continued this new trend, and Cannon, Prince and others have carried it farther. The war called attention to this domain, and so have the Freudians. The emotions, then, not only give strength to the will but are agents in the cure of disease. The problem now is to guide the emotions, not to eradicate them. Here religion has been a great power. The Occident stresses and the Orient suppresses self-affirmation. There was a time when there was no anger in the world; but this began with struggle and developed chiefly in the vertebrate forms of life, so that it is an achievement The proper uses of pugnacity are the suppression of evils. Individual readily passes into group anger, and we then have warfare. Among the first antagonisms are those of nubile sons against the father, with exogamy sometimes resulting. Thus anger became a family matter. It may turn inward upon itself. It is uncreative and very commonly destructive; this of course, is easily shown. It is also secondary, because the affections and appreciations of oneself and of others must precede it

In Part II the author begins his discussion of anger in relation to religion, classifying Judaism, Zoroastrism and Islam as irate and martial religions, and illustrating this thesis by many citations; God is angry and commands men to fight. Tâoism, Vishnuism, Buddhism and Jainism are unangry religions, placing their taboo upon all manifestations of this impulse, so that it has no place in theory among their adherents. Confucianism and Christianity are religions of "anger-supported love," i. e., they both admit anger in the defence of loved objects, and so in a sense presuppose love.

In Part III the author discusses anger in religious growth; first, man's anger as directed toward the supernatural, the anger of the gods, curse, persecution, and war in religion, the worship of malign spirits, anger and the origin of religion—that is one of its prime emotional constituents, jealousy being one of the sources of monotheism.

In part IV he discusses the future of anger in the West, dealing with war and the native impulses and the right offices of anger with fifteen rules for the fighting mood. We need not, therefore, trust kindliness alone, and it will be long before we can dismiss anger from the service of good-will.

The author is professor of psychology, but has taken very little cognizance, save in his first and most interesting chapter, of the psychological aspect of anger, with which indeed he seems but little acquainted. This is most unfortunate. The development of anger in the human individual from scratching, biting, pounding one's head on the floor and screaming, to its manifestations in the cultivated adult is an extraordinary case of recapitulation which should at least have been referred to. We find nothing, too, in this book about berserkers or the amuckers, the vendetta codes and pathological anger, on all of which there is a constructive literature.

Another grievous defect in this book is the misconception and consequent eviction of the new psychoanalytic concept which finds in anger the key to nearly all of man's aggressive impulses. It may have been pathological that Michael Angelo frothed at the mouth with rage at the rude block of marble when he began to hew it into a statue; but this illustrates, as pathology so often does, a very fundamental aspect of the genesis of anger which our author treats in so unsatisfactory and so unconvincing a way. Sublimation of anger and its therepy from petty irritability to sublime rage against evil, as this has been worked out in various Freudian monographs, should have had some recognition in a book like this. It is a matter of course to the genetic psychologist that anger cannot be uprooted but must be cultivated and intensified, but directed against the great evils that now threaten the world The maxim "make no enemies" is craven, for we all ought to make enemies of the wrongdoers about us. It is not only lamentable but ominous that great and holy rage is almost unknown today, sublime as it is. Perhaps anger chiefly gave man his second-breath or his higher powers. Orlando Furioso, the wrath of Achilles, the theme of the Iliad, are sublime each in their way. The trouble with man is that he needs to be more, not less, of a fighter, but of course vastly more such that his cause is just. In daily life most of us are pusillanimous.

But was it worth while to collect so laboriously from ancient myth and rite, where proof can be found for anything, such a poorly digested mass of instances where gods have hated men, or in another chapter, hated each other, or in a third even been hated or degraded to devils by men, or to instance the jealousy of gods that claimed to be the only ones? Of course men made gods in their own image, and so they reflect human nature. Religion has been no more effective in regulating anger and warfare than it has in regulating sex, which is its yet more special prerogative. Again, that anger serves a useful purpose and that the world could not get on without it, which seems to be the burden of this book, is really new only to modern ethics, which is hopelessly behind both psychology and religion in its views on anger, as it is on most subjects dealing with the sentiments.

But these limitations of the author's field should not blind us to the high praise due to him for his diligence and perhaps we might add his boldness in attacking a subject which the professional psychologist too long shrank from. It is a work of great merit and we hope will stimulate other specialists to develop other sides of its vast theme.

Mental and Scholastic Tests. By CYRIL BURT. London, P. S. King & Son, 1922. 431 p.

This volume consists of three memoranda. The first deals with the practical use of psychological scales for measuring the intelligence of children. The second discusses the practical value of the results obtained; and the third gives suitable tests of various educational attainments. The

book contains practical scales and group tests for the measurement of ability, and standardized tests for the chief subjects of the elementary-school curriculum, and describes the lastest methods of psychological diagnosis with methods of treating backwardness. Mr. Burt criticizes the suggestions of American experts such as Yerkes, Goddard and Terman for the improvement of the Binet-Simon scale, and gives tests which he thinks most suitable for London children at different ages. Tests infinitely more scientific than those yet wrought out are to be expected, for we are nearer the beginning than the end of this work It is all an art more than a science.

On the whole this volume is perhaps the very best in its field in any language, and the good sense and sound sagacity of the author will commend themselves to all impartial and competent minds. "Attainment is a poor measure of capacity, and ignorance not proof of defect. Merely from school work neither normal ability nor abnormal, neither high ability nor low can conclusively be inferred. To assume that wherever attainments are meager ability must also be low will always be precarious. Poor health, poor homes, irregular attendance, lack of interest, want of will—these are far commoner as causes of inability to spell or calculate than are inherent weakness of intellect and genuine defect of mind. Certainly the dull are usually backward but the backward are not necessarily dull. Nor does a high measure of ability always confer a high standard of school work," as countless autobiographies show. To show precisely why a child is backward; this is the supreme practical problem. Thus conversants with but one version of the tests cannot appreciate what a background the scheme has proven for variations in technique. The author agrees with Simon, too, that translations of the Binet-Simon text are difficult and inadequate, and Simon himself, before his death in 1911, revised that of Burt. The author is of the opinion that an entirely new scale, or rather new series of scales, must be constructed and built up from the very foundation. Every child should be tested for at least four age groups, although this takes longer "The initial tests should act as shock-absorbers; their purpose is to allay the nervousness and engage the interest of the child, and at the same time to enable the examiner to obtain a broad preliminary estimate of the child's general level with an eye to concentrating later upon more crucial tests, that is, upon such, and such alone, as may seem not too far above or below his capacity to be worth the toil of applying." He then suggests many new and modified tests which he found more serviceable than those directly imported from France, and gives many elaborate tables of results especially in the determination of mental age. He found for the London children that the age assignments of the tests differed widely from those of Binet, whose distribution ought to be stiffened for earlier and eased for later years; i. e., the tests for younger children were much too easy, and those for the older children a little too hard, "while for adolescents and super-normals there were, and are still, no fit tests whatever, On this scale sex counts little, social status rather more, educational and particularly linguistic attainments most fo all, while qualitative conditions such as temperament and educational attitude give too variable results to be of value. In diagnostic value, too, the single tests differ widely. Many are scholastic, more are linguistic; they yield a high correlation with intelligence. The numerous educational tests have occasional value, the rarer tests of reasoning a permanent one, and some tests, such as suggestion, no value at all. In grading the normal children among themselves it is less accurate than other tests now at hand. With these defects the question arises whether there is any better test. The ordinary function of such tests should be to estimate intelligence among children backward in attainments and still young in age, but in other

respects forming for the examiner an unsolved problem. For this purpose the Binet scale is superior to the unaided judgment of the examiner, but there is so far no better one available. We must not, however, overestimate its value, and its temporary adoption should not block further enquiries. Unwarranted claims advanced on behalf of this method in various foreign quarters are a byword. The routine examiner remains unconscious of the frail foundations upon which his standards of comparison rest, but the rigorist and the precisian have not been disposed unflinchingly to abandon this scale the worth of which is so ill attested and so feebly based. We must therefore look rather for something distinctly better.

The first memorandum is devoted solely to the Binet-Simon scale and the practical use of its methods, the list of its material, its nature, directions for use, other versions, illustrations needed for particular tests and so forth. The second memorandum is devoted to the theoretical validity of the results, scope of investigation, origin of difficulties and their location, distribution of intelligence, mental ratio, relation between ability and attainment, adjustments to delinquents, effects of sex, social status, and diagnostic value. The third memorandum is solely devoted to tests of educational attainments in reading, spelling arithmetic, writing, drawing, hand-work. composition, with a range of individual variations and so forth.

The final conclusion of this author is most wholesome, for he regards all these scales which he has so elaborately described as only tentative. "Each test in its present condition is to be regarded as a venture rather than as an achievement, as a provisional and imperfect illustration rather than as a finished and final product. It is put forward as a stimulus to the enquiring teacher as a starting point for further research, calibrated, patented, and warranted exact." He thinks even his tests, on which he has been working for so many years, are perhaps prematurely published, but this is done in the hope that they may profit by criticism and not be used as touchstones for the criticism of the work of others. It is all a rough plaster sketch, preliminary, miniature. "To attempt a complete collection of standardized scholastic tests will assuredly be to undertake a colossus; to perfect such a series will be a task beyond the power of any solitary investigator experimenting only in a few select schools. It must be the self-appointed attitude of a large band of co-operating enquirers, expert teachers," working on a pre-arranged plan and pooling results, and so forth. The sooner such research proves these scales to be worthless the sooner will their aim have been achieved.

It is important to find for the tests an order of difficulty fixed and universally the same for every type and class. Success and failure depend upon a vast variety of factors so that every seriation of tests is more or less arbitrary and not final. Girls of even the poorer classes excel boys in all tests involving the use of language, and just here both sexes of the better classes excel those of the lower. Boys are more ready with the hand and eye than with the tongue and pen, and this shows that many of the qualities tested are more acquired than inborn. In suggestion alone the poorer classes commit fewest errors. Thus in general there is a strong correlation between the relations of sex and of social status. We must not forget, too, that in character interests and emotional dispositon girls differ vastly from boys. Now in all such cases superiority is not inherent but superimposed or acquired rather than hereditary. It emanates from the environment rather than from inborn talent. "In a valid measure of pure intelligence accidents of superiority should have no weight." Hence "we must concede a large allowance to the poorer child before we permit ourselves to accept his weak performance as the sign and seal of mental defect." Again in the standard of comparison which comes from the observant

teacher, who has been with the child daily, perhaps for years, and out of school, commonsense should be weighed quite as attentively as acquirements.

The Binet-Simon test is much more trustworthy with defectives than with normals, and for the latter it is best from six to eight. As to the validity of the individual tests themselves, we need a far more intricate study than has ever yet been made. "No question is at once so manifestly fundamental and yet so generally ignored."

Here, thus, we have a tester who brings to his work, of which he is a master, the larger view of the defects and limitations of even these most widely exploited tests. He has neither scorn nor jealousy of the value of the judgment of wise and insightful teachers. He recognizes the very limited part of the whole psychic domain on which these tests shed light. He realizes that it is only early dawn and very far from high noon in the development of the testing movement. He believes in it because he believes it capable of accomplishing far more than it has yet attempted His book is, therefore, one which not merely the orthodox Simonists, but still more the authors of the hundreds of other tests now suggested in this country, should give careful heed to. Moreover, both his work and his superiority make a far stronger appeal to teachers themselves, and give a higher rating to their own judgment than does the work of the American testers.

Tobacco and Mental Efficiency. By M. V. O'Shea. New York, Macmillan Company, 1923. 258 p.

This book is partly based on the report of a committee to study the tobacco problem, organized in 1918 and prompted by the enormous increase in the use of the weed. Just after the Civil War we consumed 1.8 pounds per capita. After the world war it was 7 pounds; and the production of cigarettes, which was three and a half billions in 1905, had risen to forty-six billions in 1918. More than one and a half million acres were devoted to raising tobacco, and we now spend about 1,600,000,000 dollars a year on it, not counting its accessories. This book is the first issued in the name of the committee, and the author has spent much time upon it.

In Part I he discusses data derived from observation, introspection, and a biography collecting many opinions and much testimony.

Part II considers data derived from school and college records; Part III those derived from the psychological laboratory and the work ends with a copious biography. Tobacco tends to retard and disturb mental processes, but only slightly so. There is much difference in its effects upon individuals from day to day and in different intellectual processes. It varies, too, with the time between smoking and mental work, but only the simpler intellectual processes have been studied. The laboratory tests do not answer the question whether it strengthens or weakens creative ability, the most dynamic and aggressive of the intellectual functions. We do not know whether it improves or injures judgment. Its effects upon alertness, too, differ, as they do upon ambition or "gumption." In general it is not proven to be detrimental to the mental efficiency of some, though it may deter others.

Very different is the case with immature people. Tobacco is a deterrent in high school, and may cause mental deterioration in those of college age. These general and impartial conclusions should certainly put a quietus upon those who would banish the use of tobacco from the world. Its enemies will not find the overwhelming proof that it is injurious which the laboratory has been supposed to give, although the weight of evidence goes to show that it is bad for the young On the other hand we must infer that there are those to whom its moderate use is a wholesome stimulant. This is a book which all teachers and parents should know.

A History of Magic and Experimental Science: During the first thirteen Centuries of our Era. By LYNN THORNDIKE. New York, Macmillan Company, 1923. 2 Vols. 835 p. 1036 p.

This work may justly be called monumental, not only in size, for it contains nearly 2000 pages but in the magnitude of the research involved and the revolutionary nature of many of its conclusions. The author has visited many foreign libraries and pored over countless manuscripts to get at original sources, and his quest has been richly rewarded by new data which shed a flood of light upon the history of philosophy, medicine, theology and culture generally. It has also a large choice of material for psychology.

The author has been at work on this for more than twenty years. Magic he understands in the broadest sense as including all of occult arts, sciences, experiments and folk-lore. Magic and science have been connected from the very first, and all through their development, and neither can be understood without the other. The magicians were the first to experiment. The work centers on Latin, but has included Greek and Arabic, so far as these are really contributory. Frazer goes a little too far in regarding magic as a purely social product of tribal society, magicians representing the only professional class amongst the lowest savages. Nor could it be said to rest solely on the system of religious belief; but it is older than belief in gods, so that in a sense religion rests on magic. Perhaps the magic incantation is the oldest fact in the history of civilization, and this attitude persists in our modern culture, *e. g.*, in literary expressions and in musical modes. Certainly in Egypt it is older than belief in the gods, and it is found in mortuary magic, figurines, amulets, scarab and medical rituals. Divinations have been always associated with it, and the religion of the primitive Roman was little else than magic which dominated his daily life. Its ideas persist far more than we are aware. There was intense curiosity about nature's secrets because it was felt that there was so much that was yet unknown. Roger Bacon was not alone herald of science, and it is a "vulgar error" to consider him so.

Medieval men were wider readers than was once thought; the scholastics more systematic in a way than even the classical writers. The Latin of the thirteenth century was in some respects in better style than the Latin of the classical period. Natural science in the Middle Ages was not the mere handmaid of religion. The church often advanced it, and its opposition to it has been greatly exaggerated. It was not generally held that human sin affected the course of nature, and there was less allegorization in Middle-Age nature study than has been thought. Of course, so far as nature was felt to be unknown, there was a strong belief in occult influences of animals, herbs, gems, stars and spirits, as well as in amulets, fascination, number, mysticism, divination by dreams, power of words, characters, images, rites and in casting lots. Animism had pretty much had its day, and witchcraft came later. Astrology was most influential of all throughout the period here studied, and many forms of magic are simple subdivisions of or related to it. Some forms were for a time over-developed and split off, and then their original meaning was forgotten. Men have a natural craving to assert and hear the sensational and impossible, and to fly in the face of reason and experience. Why? Most of the writers here considered said in their hearts to magic: "I believe; help thou mine unbelief"; and therefore showed that their faith in it was always qualified. Indeed the fallacies of magic are hard to detect. Certain it is that magic formed a great part of the life and thought of early man, and science grew up in the very midst of all its superstitions and anarchy, just as the modern states of Europe evolved from feudal society. When men still believed in demons and spirits, it followed that they must believe in magic. Only a small part

of nature's secrets was revealed, and it was felt that anything might turn out to be true when "one vast realm of wonder spreads abroad."

Moreover magic still lingers with us. Science has just begun. Much of our learning will sometime seem just as futile and fantastic. We forget Ptolemy's great law that our hypotheses must be the simplest possible consistent with facts. Take what we call "good form" in conduct or style in writing, or charm in personality; here we still have the attitude of magic. Again, the medievals did not purposely conceal scientific discoveries as they were thought to have done. We all have only a limited number of ideas, and the man who adds one to our collection really does a great thing.

Finally, the author is greatly impressed with the vast body of material which has lain beyond the scope of even his extended studies.

A Mother's Letter to a Schoolmaster. Anonymous. New York, A. A. Knopf, 1923. 283 p.

This book is highly commended by J. H. Robinson and John Dewey, and is indeed startling. It is a pedagogic El Dorado developed from an ideal community suggested by the writer's little son, Peter, and leads to the plan of a remodeled public-school building with the seats all taken out, and in their place on the different floors a tiny bank, museum, laundry, living rooms, music room, theater, garden, nursery, art gallery, and a dozen or two more wherein the children should learn to govern themselves and where their environment would be arranged so that they would be obliged to do so. The principle of evolution is the basis of everything, and legal, civic, moral, social and the whole design is to equip for citizenship. In a very comprehensive chart a great circle is arranged so that the inner third represents primitive society as developed for 45,000 years or more, the middle third represents 5000 years, and the outer third the developments of the last hundred years. All topics are arranged under the following heads: government, recreation, information, food, shelter, clothing, exchange, transportation, communication, with the score or more of topics under each of the heads near the circumference. Radiation from the center of this circle represents lines of progress as measured by the age of the world and of the child. Under these above captions all topics are treated with no reference to the ordinary demarcations of the subject matter in the curriculum; and the child, when its education is complete must know something of all and all of some of them. Indeed a picture is given of an imagined community center which could fill a city block. Children's centers should be reserved in public lands for ten or twenty blocks, and they are made up on a plot of say 200 by 100 feet. It would be a group of small cottage-like houses, and it might be called the Children's University with the purpose of rearing happy childhood to useful works. It would be also a temple for adults. The whole community should be interested in it. There should also be a shopping arcade perhaps in the school building.

The fundamental ideas are that (1) democracy to be learned must be lived, (2) the rejection of all subjects, (3) the adoption of a school machinery which will offer natural means for the rounded development of all children, (4) nursery play that will make the child think for himself, and (5) orderly, continuous modes of occupation. The Board of Control should be composed of parents, conscripted citizens and representatives of the state. The groups of buildings should be round a campus, and, in a word, everything in modern society and life should be represented. Everything is worked out in great detail, group by group, age by age, topic by topic, and were these pipe dreams realizable we should have a children's paradise; no Greek, Latin, algebra or other hated subjects would be introduced unless children were ready for and wanted them. It would, of course, mean enormous expense and radical reconstruction. It is a scheme well calcu-

lated to make the hack pedagogue stare and gasp; but teachers love and need idealism in their vacations to hearten them for the dull, mechanical drudgery of their profession, and so we recommend that in the coming summer, instead of the drudgery and expense of attending distant meetings, they take this book, and lift and expand their souls by absorbing its beautiful dreameries, remembering meanwhile that pedagogy is in its infancy, and that perhaps when it is mature in some far off age, like some of the few more fortunate dreams of childhood, it may come true.

Outlines of Psychology. By WILLIAM MCDOUGALL. New York, Charles Scribner's Sons, 1923. 456 p.

This generous volume, with the additional one promised on "Morbid Psychology," represents what we deem the most fruitful tendency in the whole field of modern thought regarding the psychic nature of man. The author confesses that the time has gone when any one man can hope to write an adequate text-book of psychology, and condemns the dominant tendency to analyze the mind and its processes into elements as mechanistic science, interpreting all processes as mechanistic sequences of cause and effect. Purposive thinking and striving are essential in his way of thinking.

He has little sympathy with the practice of current text-books to begin with neurology, or even with the study of the separate senses. His predecessor, Münsterberg, affords him a striking example of a man who changed gradually from the psychology that borrows its methods and cults from physical science and purposive psychology, although in James both strove with each other. The tendency to simplification is, in fact, the root of the mechanistic mosaic psychology that talks of units of feeling, atoms of sensation, principles of mind composed of ultimate entities, and so forth. Bertrand Russell's analysis of mind pleases him, and behaviorism he thinks "a most misshapen and beggarly dwarf just now rampant in this country." He has sympathy, however, with Head, Marie and Bergson. In Germany the old mosaic psychology is passing and a better way already appears. It is now seen that one cannot grasp the mind with number or a measure, and a new qualitative psychology supersedes Wundt.

It is this mosaic psychology which McDougall here rejects, but admits his great indebtedness to Stout, as well as to Hicks, Bradley and James Ward. He prefers to lead the student up to the human by way of the animal mind, to which he devotes several chapters, and then passes to the behavior of the natural man, and practical thinking, attention, interest, intelligence, emotion, belief and the growth of mental structure.

A large part of the book consists of quotations in fine type from many authors which beginners are advised to skip, and we should suggest that they also skip the excellent but long and intricate introduction and begin with Chapter II.

We hope the supplementary volume that is promised will appear soon, because on so many points one must read this volume with more or less suspended judgment until the other appears.

Four and Twenty Minds. By GIOVANNI PAPINI. New York, 1922, Thomas Y. Cromwell & Co. 324 p.

This collection of twenty-four essays begins with a portrait of Papini which is certainly as ugly as he says, and ends with a characterization of himself, evidently an extravaganza of all the criticisms made against him.

The Unknown Man is the masses who have done all the main work of the world but remains personally unknown. Dante would be a spiritual pope envious of the supreme pontiff, but magnifying the judgment-day function by assigning the great men living and dead to their place in Hell, Purgatory or Heaven.

Berkeley is a fatuous religionist, a Rousseau who could not see the world as it is. Spencer, despite his essay on Individualism, is severely censured because he resolves everything back to original generalities which alone are true for him, so that he is an enemy of personality which is a fetish of Papini's.

In his essay on F. C. S. Schiller, with whom he is in profound sympathy, he betrays his pragmatism, which is evidently his own dominant motive and, to my mind, is the key to his "Life of Christ."

Hegel is himself a charlatan, and Croce, his Italian interpreter, is utterly unintelligible. Nietzche is a saint for whom he has unstinted admiration, and Walt Whitman is another. Maeterlinck is a mystic who has made his vagaries popular and profitable, but he is commonplace and almost a charlatan.

In Swift's "Gulliver" and in "Don Quixote" he finds the bitterest satire on modern life. "William Tell" is an embodiment of the Swiss soul, also fairly commonplace. He lauds Tâoism, finds much to commend in Calderón, but to my mind the key to his own mentality is found in his laudation of Schiller. He once loved "Hamlet," but on closer and later study found him to be a "fat neurasthenic half evil, half imbecile." . . . "The soul of the tragedy is false" . . . "The psychology of the protagonists is incoherent; the most striking parts are merely banalities in disguise. Something is rotten even in the art of Shakespeare."

Introduction to the Theory of Educational Measurements. By WALTER SCOTT MONROE. Boston, Houghton Mifflin, 1923. 364 p.

This is a valuable if somewhat technical treatise on the subject. "Whereas previously we graded and promoted pupils largely on the basis of their chronological age, we can to-day determine their mental age with accuracy, and know that it is the more important basis of the two to use." Again "where formerly we used only simple arithmetic in tabulating results and spoke in terms of the simple arithmetical average, we to-day have a well organized body of mathematical knowledge and statistical procedure to apply to the analysis and interpretation of results, and these results we express in terms of median, mode, frequency-distribution, percentiles, probable error, and degree of correlation." . . . "The mastery of these new tools has to-day become almost essential in the equipment of any man or woman who aspires to educational leadership as School Principal or Supervisor of instruction." In the various chapters the author discusses: The beginnings of standardized objective tests, the nature and process of educational measurements and their use in the work of the school, the construction of educational tests, the description of the performance of pupils, quality scales, derived scales, norms for educational tests and their use, how to make a critical study of educational tests, using such standardized tests and statistical methods, and relationship between sets of paired facts. There are many curves and tables; each chapter is followed by questions and topics for investigation, and there is an all-too-brief index at the end. It is not an easy book to read; and to our thinking it is made needlessly hard by some lack of perspective, so that the non-expert reader will find difficulty in distinguishing between the prime essentials and less essentials. This is, however, a danger which Burt's book so conspicuously avoids, and suggests somewhat incomplete mastery of his material on the author's part, but it will be a very valuable *vade mecum* for all workers in this field.

Educational Sociology. By DAVID SNEDDEN. New York, The Century Co., 1922. 689 p.

It was rumored that the author resigned his position at the head of the

Massachusetts school system and returned to teaching at Columbia in order to write a book, and this, we presume, is that book. It is, as he well says, "chiefly a book of problems," and is unique in that it attempts to combine sociology and education. Its five part are: (1) Societies and social groups; (2) social forces, processes and values; (3) sociological foundations of education; (4) sociological foundations of the school subjects; (5) two chapters in all with a three-page bibliography for all four parts and with much supplementary reading at the end of each chapter.

To our thinking Part 4 is the most important, for here he takes up the social value of each of the important school branches: English, modern and ancient languages, mathematics, science, geography and so forth, and suggests many important modifications of present practice, especially changes in scope and relative time given to many of the more important topics of the curriculum. The best things in the book are put forward rather tentatively as points to be considered. It is an original contribution to education which ought to have a good and wide influence, but we fear it is very voluminous along with the breadth of view, and will not make a very strong appeal to teachers who ought to read it. To our thinking it is essentially a superintendents' book and one of the best and most comprehensive offered to them in recent years.

School Program in Physical Education. By CLARK W. HETHERINGTON. Yonkers on Hudson, World Book Co., 1922. 132 p.

Part I deals with the economic and social changes which have made imperative the introduction of a system of physical education in the public-school curriculum. The causes of retarded development of physical education are pointed out chief among them being public opinion, national experience, many powerful prejudices and the traditional educational thought relative to physical education. It is shown that a changed public opinion and an improved technique of physical education have resulted, largely through the athletic movement, the playground movement, the educational recreational movements, the "health through exercise" movement and the war examinations and physical-efficiency campaigns.

There is indicated the relative importance, and the place in the program of physical education, particularly in the elementary grades, of the three types of physical activity, namely, *natural* physical-training activities, *related* physical-training activities, and *formal* physical-training activities. The fundamental emphasis is placed on the former.

Part II takes up a discussion of the five objectives of physical education, interpreted in terms of the objectives of education in general: (1) "the immediate objectives in the organization and the leadership of childlife as expressed in *big-muscle activities*"; (2) "the remote objectives in adult social adjustment or efficiency"; (3) "the objectives in development," or the changes in capacities, necessary to realize the adjustment; (4) "the objectives in social standards as applied to the activities, the development, and the adjustment"; (5) "the objectives in control of health conditions."

The author emphasizes throughout the book the value of the *big-muscle activities* fundamental in developing "the instinct, the intellectual, the neuro-muscular, and the organic mechanisms," upon which "all phases of adult social adjustment depend, directly or indirectly."

Part II closes with the author's definition of physical education, which he states thus: "Physical Education is that phase of education which is concerned, first, with the organization and the leadership of children in the *big-muscle activities*, to gain the development and the adjustment inherent in the activities according to social standards; and, second, with the control of health or growth conditions naturally associated with the leadership

of the activities, so that the educational process may go on without growth handicaps."

Part III presents a carefully thought out and a perfectly workable plan of physical education, which will very largely make possible the accomplishment of the objectives above numerated. Taking as the criteria both the child's needs, his interests and his problems, as well as the social needs of adults, the principles are given which should be fundamental in selecting and organizing the developmental program, the program of training in character, morals and manners, and the program in teaching hygienic behavior

The suggestion is made that with profit there might be worked out a point-scoring system involving such criteria as leadership, sportsmanship, fellowship and "condition." Furthermore, athletics should be organized with true *educational* aims in view rather than for the enjoyment of the spectator.

This book represents an achievement which is significant in that it presents in concise, orderly manner one of the most vital problems to be encountered in every elementary school, and offers a scientific solution based upon that which is fundamental to the child. Physical education welcomes such a contribution. BESSIE L. PARK, Clark University.

Problems in American Democracy. By THAMES ROSS WILLIAMSON. New York, D. C. Heath & Co., 1922. 567 p.

The writer here seeks to bring students into direct contact with the great current issues of American life, whch will give them training to grapple with our economic, social and political problems. The book begins with a historic background and a survey of our economic life. Its parts are as follows: Foundations of our democracy; our economic problems, including industry and industrial reform; social problems, family, rural life, education and so forth; political problems, public interest in business, tariff, taxation, credit in banking; making government effective, party elections, honesty, popular control, public opinion. We come last to the mechanism of government, federal, state and local. Each chapter has questions on the text and required and advised reading topics for investigation, report and discussion.

Constructive Lessons in English for the Foreign Born. By NINA J. BEGLINGER. Richard G. Badger, The Gorham Press, 1922. 169 p.

This book is the result of ten years' experience in supervising English instruction, supplemented by some months' work in the National Army Schools. The method is based on the fact that the teacher should utilize developed conditions and forces at hand which are in harmony with his aim, reducing memory work to a minimum. Hence he begins with Avoiding accidents; pay day; the daily paper; going to school; the workshop; Thanksgiving Day; the drug store; knitting; paving; night school; and so forth, twenty-two topics in all. In Part II the lessons center on Home; garden; furniture; health; ventilation; food; teeth; bathing; thrift; school; citizenship; the flag; Revolutionary War; the negro; the World War; and so forth. This attractive little volume is copiously illustrated, and the pictures bring in the eye as an ally.

Introductory Psychology for Teachers. 255 p. Also *A Brief Introductory Psychology for Teachers.* 241 p. By E. K. STRONG, JR. Baltimore, Warwick & York, Inc., 1922.

Instead of beginning with the most uninteresting phases of psychology and those most unknown to students the author begins with everyday life

and relates its problems to those of learning, individual differences, influencing others and so forth, considering behavior as a whole from the start. He begins by telling us what psychology is, then passes to the components of behavior; how we learn the alphabet; the relation of method, attitude and feeling to learning; how we learn a vocabulary; memorizing; retention; and how to remember; mirror-drawing; the general law as to how individuals differ; grading students; why one behaves as one does; solving difficulties; influencing others; transfer of training; reviewing; the eye; the nervous system; and so forth, fifty-eight topics in all. The course is certainly a radical departure from current systems; and herein lies its originality, although it seems to the reviewer a little doctrinaire.

Parenthood and Child Nurture. By EDNA DEAN BAKER. New York, Macmillan Co., 1922. 178 p.

This volume is to show parents in how many important ways child-study helps them to understand children and make a surer success of their bringing up. It follows the child from birth to twelve years of age. It greatly stresses the moral and religious aspects of training, with many suggestions of learning songs, games, and many other items, with cultural reading. Beginning with infancy, it has chapters on the needs of children from four to six, from six to eight and from eight to twelve. Each chapter is followed by suggestions for additional study and references, and there is an extended bibliography at the end of the book. It should prove of service, not only to Sunday-school teachers, but to parents and school teachers generally. Chapter VII, *e. g.*, is devoted to middle childhood, or cross-sections of life from six to eight with sections on physical condition, development of instincts, mental growth, compelling interests, fluctuating vitality, provisions for self-expression, need of sense preparation, collections of objects that have value, memory, emotion, mental contents, cheerful atmosphere, habits, social attitudes, moral codes, making opportunities for service, and formal training.

Our Boys. By HOWARD C. BURDGE. New York Commission, 1921. 345 p.

A very interesting and useful study of 215,000 boys from sixteen to eighteen. The majority of them are out of school and live in urban communities. Conclusions for those who are employed deal with nationality, guardianship, families, persistence in school, age of leaving it, grades completed, reasons for leaving school, best and least liked studies (mathematics most and English least), obtaining employment, length of job, why they liked their job, money saved, contribution to family support, and occupations. These and other points are illustrated by very copious tables.

Child Training. By ANGELO PATRI. New York, D. Appleton & Co., 1922. 434 p.

The author is a teacher with literary gifts, and these essaylets, none of them longer than two pages, treat of some scores of topics and are grouped under the following captions: The child in the home; school, child, teacher, parent; building the child's character; moral training; boys; adolescence; vacation time; parents; the child and the country.

Intimate familiarity with not only the school but with the child is everywhere manifest. The author is an ardent convert to the paidocentric view that everything must be based upon the children's nature and needs, and that the school must be fitted to the child and not the child to the school.

The book should interest parents and teachers alike, for the author has an

implicit belief that the child needs, and will abuse almost no form or degree of, liberty.

Personal Hygiene Applied. By Jesse Feiring Williams. Philadelphia & London, W. B. Saunders Co., 1922. 412 p.

This book with its more than two-score illustrations is an admirable epitome of its themes. After a preliminary discussion as to the manner of health, its problems, intelligence and ideals, it discusses the approach for knowledge of health, signs and attitudes, the hygiene of the muscular and skeletal systems, of nutrition, respiration, circulatory, excretory, nervous and sexual systems, aspects of love, prevention in specific diseases and finally the hygiene of the mouth, ear and eye. There is a sufficient reference to the literature on the many points contributed, and the author has in view for the most part practical ends.

Ventilation. A Report of the New York State Commission on Ventilation. Price, $15. By E. P. Dutton, New York, 1923. 620 p.

This is the most elaborate treatise to date on the whole subject of school ventilation. It summarizes very many detailed studies in different New York schools, directed by a central laboratory, as to the effects upon health and mental vigor of the different degrees of heat, 68 F. being the optimum degrees of humidity; and especially the different methods of ventilation, window ventilation on the whole yielding the best results.

No brief note can do justice to the detailed thoroughness with which this very comprehensive work, participated in by scores of investigators, has been carried through. Its general results are not only of great scientific but of great practical importance.

Judging Human Character. By H. L. Hollingworth. New York & London, Appleton & Co., 1922. 268 p.

The author discusses in successive chapters the value of letters of application; character in photographs; judging one's own traits; the personal interview; recommendations and testimonials; and common sources of error and their correction; all of which methods he thinks of little use, and his discussion serves as a good background to bring out the value of measuring mental competence, special and general. Other chapters are devoted to the method of the simple general analysis through correlation, diagnosis of temperament, and the psychographic method. This takes us to page 215, and the rest of the book is devoted to appendices and reports of experiments upon the various methods. The book is rather elementary but is well calculated to serve as a general introduction to the subject. A dozen photographs of children which reveal and conceal traits of character are included; but to our thinking the title is vastly too large for the book, and those who read it might find it a good introduction to Monroe's more expert treatise.

The Pre-School Child. By Arnold Gesell. Boston, Houghton Mifflin, 1923. 264 p.

This book should be in the hands of every one interested in young children before the school age. The author is not only professionally interested in children, but has actually observed his own and is freely versed in the literature of the subject, and he writes with a freshness and lucidity that are rare. We do not think he does justice to the Freudian views of infancy, but this will in many quarters be considered a merit. It is impossible to review adequately a book of this kind in our space, but perhaps special attention should be called to the appendix E on the or-

ganization and activity of pre-school agencies, which tells us in six pregnant pages what is being done for the child of this age. Interesting, too, is his treatment of the working of the new maternity and infancy law, and the examination of school beginners. In the body of the book he discusses the growth of such subjects as the significance of this period, the growth of child welfare and hygiene, the nurseries and nursery schools the kindergarten school entrance, pre-school protection for handicapped children and those without apparently great reliance on the home education for this period, social control and its hygiene and its organization.

Children and Childhood. By N. Niemeyer. Oxford, University Press, 1921. 204 p.

This little book epitomizes a good deal that we know about children, sectioned into years, with the punctuation marks at one, five, eight, twelve and sixteen years of age, with tables of height and weight for all stages, and treating topics like nerve, muscle, habit, brain, instinct, sight and touch, play, sex discipline, imagination, self, interests and many other topics. The book is good in spots, but gappy, omitting a good many important topics, and the bibliography is still more unsatisfactory. In fact, between the needs of the parent, the teacher and the student of childhood, the book hardly fits the needs of any.

Man and Culture. By Clark Wissler. New York, Thomas Y. Crowell Co., 1923. 371 p.

The author is connected with the American Museum of Natural History, and draws upon its rich stores. He praises the rise of contemporary civilizations, comparing the modes of living of widely separated races, with very interesting parallels. The effect of his environment upon man is the keynote of this work. He first discusses the meaning of culture and its continuity, and in Part II passes to its form and content: universal patterns; how traits of culture are acquired; its spread, natural versus organized; divisions; culture building, its genesis and so forth. In Part III, on the relations of culture to man, he discusses it as human behavior, the individual and the race in culture; the domestication of man and its consequence; the environment; the rationalization of culture processes; through seventeen illustrated figures Each chapter is followed by a bibliography. It is a unique contribution to culture history with points of view and *appercus* many of which are novel in this field. It is an admirable illustration of the new method that has come to prevail in the study of human history, a method which is now having a very rapid development.

Children's Interests in Reading. Thesis. By A. M. Jordan. New York, Teachers College, 1921. 143 p.

After reviewing previous studies the writer proceeds to the investigation of children's interests in reading by the methods of the questionnaire, also the libraries for children, and then interprets and correlates his results and discusses sex differences. The importance of such study is great. It had long been known that reading tastes of the sexes differ, but this author finds that the major interests of boys from ten to thirteen are in four types of fiction: (1) war and scouting; (2) school and sports; (3) Boy Scouts; (4) adventure War books made up thirty-two per cent of the total books of fiction, school and sport twenty-nine, and Scouts sixteen. Altsheler, a writer of war and scouting, is most popular for war and so forth, Barbour for school and sport, Burton for Scouts, and Clemens for adventure. The instincts of mastery, fighting, love of sensory life for its

own sake, lead. In non-fiction, boys want the what-and-how-to-do types of books, the Boy Scout Manual being by far the most popular. Biography and history must be written story-wise; *St. Nicholas* and *Popular Mechanics* are the popular magazines.

Girls' interests are (1) home, thirty-seven per cent; (2) home and school, nineteen per cent; (3) fairies, six per cent; and so forth. The Alcott books are far more popular with girls in the eight libraries here studied than any other author. Instincts appealed to are maternal, kindly, response to approval, and less than boys to rivalry. Girls have less interest in non-fiction, *St. Nicholas* being the only magazine that appeals strongly to them.

The Hope of the Variant. By JOHN GEORGE GEHRING. New York & London, Charles Scribner's Sons, 1923. 252 p.

The author of this book is the original from which Robert Herrick's "Master of the Inn" was taken. The variant is a child or adult who differs somewhat from the normal, and this writer has had a long experience in the use of suggestion, education in optimism and so forth, but he combines the physical with mental treatment, and writes of obsessions, habits, morbidities, improper mental functioning and so forth in an extremely wise and attractive way. In his twenty-two chapters he discusses such topics as balance of power, cross-currents, training versus teaching, obsessive ideas, putting yourself in his place, crutches, side issues, applications of suggestion, the clamor of a need. When a man has spent a long life in successfully treating so many patients of all ages and stations of life, and has had the advantage of seeing them in his own hospital, and then writes a book, it is pretty sure to be of unusual interest, as indeed this is. It is impossible to give an adequate idea of the merits of this book in a short space, for they pervade it throughout. There is hardly a reference to literature from cover to cover, but scores of perhaps rather too brief characterization of cases at first hand. The present writer believes that it is a book that will do most good of all to physicians now in practice who are not too old to learn the importance of taking account of mental states. It could also be read with profit by teachers, but its appeal is so wide that every intelligent individual who reads it would learn something of him or herself and be helped in the conduct of their lives.

Penal Discipline. By MARY GORDON. London & New York, George Routledge & Sons, Ltd., 1922. 238 p.

This book is not an autobiography and in no sense official, for the author has retired after long service. Perhaps nothing more cogent on prison reform has appeared in recent years. The author discusses the petty offender, his discipline, the inveterate vagabond, streaks of character, the young prostitute, the making of the common prostitute, prisons and venereal disease, the tattooed woman, systems, psychical considerations and so forth, in a most interesting, vivid and concrete way, with many illustrations and even photographs of cases. Best of all, however, is the author's conclusion that it is simply vicious to treat the feeble-minded criminal, drunkards, paranoiac cripples and young offenders under one penal discipline. The ideal scheme would be a large colony, like that at Veenhuisen, which is the last and best thing yet in this field. Its large area enables plenty of varying industries to be established, and this could be developed to any extent. People under control should also be able to earn their own living by conducting business from their place of control if they find themselves able to do so. The relation of doctor to patient should be very greatly developed, so that there should be absolute freedom on both sides with strictest professional confidence. The House of Detention, in other words, should be a little world of itself.

Pädagogisches Zentralblatt. Breslau, Ferdinand Hirt, 1922. 488 p.

This monthly *Zentralblatt*, now in its fourth volume, is today the best general expression of pedagogic ideals and progress in Germany. It is made up of articles on such topics as the development of ideas, status of Greek language in education, of pedagogy, geography, the progress in education, statistics, the linguistic function in education, the differences between theory and practice, the teaching of psychology and philosophy in the higher schools, object lesson methods, civics and politics. A large number of books and articles are named, or very briefly characterized under the following captions: (1) Studies of children and young people, (2) general education, (3) organization, (4) kinds of school, (5) didactics and its methods, (6) juvenile welfare, (7) vocational, (8) general pedagogic literature.

Problems and Methods of Vocational Guidance. By Dr. Edouard Claparède. Geneva, International Labour Office, 1922. 76 p.

The Labor Bureau at Geneva is convinced that, apart from its economic value, vocational psychology if properly applied will not only increase the output of labor but improve the status of the working classes and the methods of recruiting labor, and make for its better organization, technical training, reduce unemployment, secure a better wage, protect against illness and safeguard women and children. In this pamphlet we have the best general presentation known to the present writer, not only of the function but of the historical development of vocational guidance and scientific management before and since the war. Occupation analysis is described with its psychographs and the classification of occupations. We thus have a diagnosis of vocational abilities with its methods and psychological tests which are divided into six types, including the problem of general intelligence, and finally the diagnostic value of tests, the problem of educability and plans for further research.

Die Auslese befähigter Volksschüler in Hamburg. Von Rudolf Peter und William Stern. Leipzig, Johann Ambrosius Barth, 1922. 161 p.

Tests for the selection of superior children were begun in Hamburg in 1911 by Meumann, and these have been carried on by Stern and his pupils. Some of the results have already been published, and these eleven monographs are further descriptions of both methods and results. The articles describe the various methods that have been used; and, while to our mind there is too much theoretical discussion, it is very evident that the handling of ideas, which Herbart long ago told us was the chief function of the higher mentality, is the criterion mentally relied upon. Perhaps the best of all these is the famous three-word method, by which several series of three words are to be made into coherent sentences, the first combination being simple and obvious, the last requiring something hardly less than a paradox. Stern is the pioneer in this field, and these articles must be regarded rather as reports of progress than as finalities.

The Child and the Home By Benzion Liber. New York, published by *Rational Living*, 1922. 256 p.

This book consists of scores of short dashy articles with an introductory note from Upton Sinclair and a reply. The material is divided into five parts: (1) On fundamental errors, (2) on practical advice, (3) instances, (4) sex, (5) health. The author would never punish, and criticizes Upton Sinclair's burning his baby's finger with a match to teach it to keep away from an open fire. On the whole these talks are admirable and would do

very many parents great good. The author has a certain sympathetic insight into the life of children, and his praise of the country, his defence of lies due to imagination, of curiosity even if it prompts to destroy toys, his strictures on toy soldiers, his "let alone" policy when children fight, are admirable; but like most writers of this ilk who have not made a special study of paidology he has grave limitations, and there are very many topics of great importance and entirely pertinent here which he quite ignores. He trusts to his sympathetic insights, which are unusually well developed, but seems to be strangely ignorant of the vast literature upon paidology which would have greatly broadened and enriched his book at almost every point. Despite his "let alone" theories, he would supervise the child in many respects to a much greater degree than those whose insights have been broadened by a larger knowledge of what is already known upon this subject. Such themes as play, toys, gibberish, sex, smoking and many others are unsatisfactory.

Differentiation of Curricula between the Sexes in Secondary Schools. London, Published by H. M. Stationary Office, 1923. 193 p.

The gist of this report is in foreign recommendations: (1) Girls should take first examinations a year later than boys; (2) the pressure of examinations, which is responsible for much overteaching and the unduly passive attitude of many pupils, should be reduced; (3) more effort should be made to protect girls against physical fatigue and nervous exhaustion; (4) that girls' schools should reduce the amount of preparation required for girls, which in some instances seems excessive in view of the relatively heavy domestic duties often performed by them in their homes; (5) that the morning hours should be shortened, and that more attention should be given to the needs of non-academic pupils after the age of fifteen who desire to remain at school for a further period. Very interesting is this committee's recommendation that further enquiries be made as to (a) the games and exercises most suitable for girls of varying ages, (b) with regard to the intellectual and emotional differences between the sexes in their bearings on education, and as to the achievements of groups of boys and girls in the various subjects of the curriculum at successive stages of school life.

Howe's New Era Civics For the students of to-day and the citizens of to-morrow, to show them what Government is and means in nation, state, and at home, to deepen their interest in community affairs, and to light their path to public duty and service. By John B. Howe. Syracuse, Iroquois Publishing Company, Inc., 1922. 420 p.

The author writes from a conviction, not only of the importance of civics, but of the inadequate and unpedagogic methods now in vogue where it is taught. It is not enough to understand a machine, but one must know the purpose of everything. His book is divided into five parts: I, Citizenship, the ballot and so forth: II, the nation, its constitution, the legislative, the executive and judicial functions; the Cabinet, currency, Government in war, constitutional amendments, women's suffrage and national defences; III, the states, how they are governed, including voting qualifications; IV, the local community, municipal methods, reforms, village and county, sanification, charity schools, transportation and so forth; V, parties, their history and function. The book is copiously illustrated with question guides at the close of each section, and an excellent index. It is the best text-book of its kind we have yet had, in the opinion of this reviewer.

The Honesty Book. A Handbook for Parents and Teachers and other Friends of Children. National Honesty Bureau, New York, 1923. 56 p.

Here we have an effort to inculcate the virtue believed to be the most fundamental for modern life and for civilization. The first part consists of honesty talks, i. e., its practical value, dishonesty does not pay, appeals to pride, patriotism and the heroic. Part II discusses methods, *e. g.*, how and when to give honesty talks, moral values of the day's work in school; a school code, how to make it a laboratory of honor, and how to conduct a school honesty club. Other parts deal with honesty in the home, honesty problems, things a community can do, the immediate emergency, materials for the teacher and parent, and commendations of a national honesty campaign. It is significant that this book seems to be written by a business man, and to have been prompted largely by economic motives.

The Training of Children in the Christian Family. By Luther Allan Weigle. Boston, The Pilgrim Press, 1922. 224 p.

This is a book for parents which deals with principles rather than with problems or cases. It has no ready-made formula, yet is not mere theory. It is intended mainly to be introductory, and is designed for parents who are familiar with international Sunday-school lessons, following their outlines. It discusses the modern home, its atmosphere, building strong bodies, making right habits, the child at play, work and study, a taste for good reading, the child and his friends, doing for others, training the devotional life, the child and the church. What we really want, says the author at the very outset is "a new set of parents." Each chapter is followed by suggestions for investigation and discussion and references to reading.

Biology of Sex. For Parents and Teachers. By T. W. Galloway. New York, D. C. Heath & Co., 1922. 149 p.

This work opens with a chapter on actual conditions, and then discusses certain principles which must guide sex instruction. The best chapter perhaps is entitled "Reproduction and Unselfishness," and the relations of sex to normal human practice and mental development. The author also discusses the mental, social and moral bearings of sex, and the central place of the home and family for this work. There are also brief chapters on eugenics, time and manner for this kind of instruction, and finally graded programs and projects in sex education. The book seems very sensible, which is high praise for anything in this pedagogic field. To our mind, however, the author is a little too shy of coming to grips with his subject in the human field, and rather over-emphasizes the botanical phenomena.

A Handbook of Mental Tests. A further revision and extension of the Binet-Simon scale. By F. Kuhlmann. Baltimore, Warwick & York, Inc., 1922. 208 p.

After an introduction upon the nature of the revision and the attitude upon which it is based and so forth, Chapter II is devoted to the general principles of the year scale, Chapter III to the conduct of an examination, Chapter IV to directions for giving a test, Chapter V to comments on the individual tests, with an appendix containing tables of intelligence quotients for ages and mental ages from three to fifteen years inclusive. The work is the result of seven years of continuous effort by the writer with his assistants to improve the methods of determining degrees of mental development in children and adults, and to keep these methods at a point of maximal efficiency. The State of Missouri was the pioneer in recognizing

the value of applied psychology, for more than twenty-five years ago it first employed an expert in this field at its school for the feeble-minded.

Disenchantment. By C. E. MONTAGUE. N. Y., Brentano's, 1922. 280 p.

A second careful reading of this volume does not in the least diminish our first impression, that the author is one of the most exceptionally brilliant and effective stylists that have written in the English language since Carlyle. He depicts with a marvelous wealth of tropes and allusions to literature and history the great change that came over the western armies in the Great War. They entered it with the highest ideals and the strongest enthusiasm but as it dragged on its weary length they became utterly disenchanted by its grim realities and its sordidness, so that in the end they entirely lost all confidence, not only in the high purposes with which they started but in those at home who conducted the war and even in their officers. When the war was ended, thus, the English soldier went home with a profound feeling of disgust which will make him forever the most passionate of pacifists. All this is given with a wonderful vividness of language and copious illustrations from the author's own experience for he was in the English army throughout the war and seems to voice the very soul of the Tommies. When in the latter part of his volume, however, he comes to suggesting what should be done, he has nothing better to give us than the old gospel of a return to the simple life and has little even in the way of suggestion as to how this momentous transformation of men fed up with drudgery, horror, excitement, and the abject following of orders from men for whom they have lost all respect, is to be accomplished. That is the real problem, and one closes the book with a depression because the author has only a perfunctory solution.

Memories of Many Men in Many Lands. By FRANCIS E. CLARK. Boston, United Society of Christian Endeavor, 1922. 704 p.

The founder of the Christian Endeavor movement here gives us a very intimate picture of his life from boyhood to the age of over three-score and ten in sixty-one chapters and with scores of illustrations. It is frank, genial, and altogether characteristic of the man who has organized the most extensive and influential of all the world-wide movements for the uplift of young people. He has four times been around the world and received honors and opportunities everywhere, and best of all has made good use of the latter, kept diaries with the very efficient assistance of his wife who was always his companion, and gives us here a human document that from his parentage and early boyhood on to the present is of palpitating human interest and to which no description can do adequate justice, for it is very largely occupied with details and incidents, revealing at every step the sincere and earnest Christian spirit of the author.

Industrial Mexico. 1919 Facts and Figures. By P. HARVEY MIDDLETON. N. Y., Dodd, Mead, 1919. 270 p.

As the result of a brief stay in Mexico the author believes that "Mexico is the richest undeveloped accessible country in the world," that she is on the eve of the greatest era of development and prosperity that the country has ever seen. Having emerged from nearly nine years of revolution and having since 1917 a stable constitution, and with a debt of only five hundred million dollars, this "beggar sitting on a bag of gold" will, he thinks, be more lenient in her treatment of foreign capital, which she imperatively needs for the development of her enormous and extremely varied natural resources. Even Humboldt called her the greatest treasure house in the world although her government is still poor. Delegations from all parts of

the world are anxious to invest large sums in her industrial development and will do so just as soon as they are assured that foreign capital will be treated with proper consideration. The breaking up of the vast individual estates is an important factor and the author estimates that there ought to be in a very few years an increase of the export trade of at least 1000%. Oil production has increased fifty-four times since 1907. The United States has so far afforded her her chief market but foreign capital seems to be absolutely indispensable for the development of the country. In his twelve chapters the author takes up railways, industry, mines, agriculture, taxes, trade obstructions, credit and banking, national debt, and government institutions. There are over a score of illustrations and the book is written in a very readable style.

Horny Hands and Hampered Elbows. By WHITING WILLIAMS. N. Y., Scribner, 1922. 285 p.

The author of this book has had a long and intimate acquaintance at first hand with the problem he discusses and knows the worker's mind in western Europe. His style is somewhat ineffective, however, and his chapter heads might have been made by a headline writer in a yellow journal. The illustrations, too, are somewhat impressionistic, not to say sensational. He does, however, know his subject and gives us an excellent picture of how the world looks to the American and the European, especially the English working man, and how all these problems have been affected by the war.

The Story of Utopias. By LEWIS MUMFORD. N. Y., Boni and Liveright, 1922. 315 p.

This is far more than a history of Utopias as they have been conceived from the past, although we have sketches of them all from Plato to H. G. Wells brought into the picture. His position is broad and philosophical. Most Utopias he deems mere flights of fancy. There is no end to the things we do badly and no end to ideals which are positively misleading. What we really lack and what this author does not attempt to supply is "a concrete Utopia which shall rise out of the real facts of everyday environment and at the same time turn upon them and mould them creatively a little nearer to the heart's desire." The reader will heartily join with the author in hoping that we may have a such a work, which would be far less an epitome of the past views of the future but a vision embodying the results of the best tendencies and aspirations of our age.

Scandinavian Scientific Review. Contributions to Philosophy, Psychology, and the Science of Education by Northern Scientists. Ed. By MARTIN L. REYMERT, Ph. D. Kristiania, With and Co. Vol. No. 1, Sept., 1922. 136 p.

This is a most attractive and really amazing venture, *viz.*, a journal in English of high quality throughout published in Norway. Among the most interesting and important articles are the theory of relativity and its bearings upon epistemology, with important educational conclusions; and the weight of school children in the summer. There is an interesting section on ergographs, with illustrations, and another on the present status of psychological science in different countries, with a general and very competent section of book notes. If the editor can maintain the high standard of the first number his journal is sure of a position as an influence second to none in the pedagogic field.

Zur Vererbung und Entwicklung der musikalischen Begabung. By V. Haecker and Th. Ziehen. Leipzig, Barth, 1923. 186 p.

This admirable investigation gives us the components of musical ability and its inheritance, traces its development in its early stages and its correlation with mental ability generally. On the basis of several score cases the authors conclude that musical ability in general is more common in men than women but that women transmit this ability more effectively than do men. Where one parent is musical and the other is not, the influence of the latter is more effective than that of the former. Of the various elements of musical gift, *viz.*, sensorial, retentive, synthetic, motor, and ideative, the laws of inheritance are very complex but the most fundamental or rhythmic most completely conform to these laws of heredity. In general the negative influence from heredity and environment illustrates these laws quite as well if not better than with positive gifts. Native ability is shown most strongly at or soon after puberty and in mental diseases the depressive types are far more likely to be musical than those that are exalted. Many of the scientific conclusions are more or less unsatisfactory and the authors need and ask more data. But many of the pedagogical applications of the above principles are obvious and important.

American Review. January-February, 1923. (Volume 1, No. 1). N. Y., 119 p.

The purpose of this new journal is to serve those interested in the formulation of the purposes of American life. It is not enough to believe that this country is destined to make its unique contribution to civilization and this journal seeks to define the nature of that contribution. It is addressed to those who want to know what they personally can do to promote a worthy and practical mission for their country. This first number is promising and interesting. Perhaps its best articles are those entitled Loyalty to Humanity, Community Responsibility in Mental Hygiene, Pragmatism in Educational Philosophy, and Religion, a Co-operative Quest of the Good Life.

The Eucken Review (Organ of the Eucken Society). Jena, Jan., 1923.

The Eucken Society, now in its fourth year and with twenty branches numbering altogether several thousand members, represents the high ethical ideals which Eucken has always advocated. It was organized just as the war closed and is dominated by the conception that the physical and material world and industry attempt to strangle the higher spiritual and moral life of the soul, which Germany is invoked to cultivate. No German philosopher better represents the best tendencies of the old German philosophy as adapted to the needs of modern times than Eucken, and despite his age he is himself just as active and enthusiastic as ever in his faith in the recuperative power of a higher liberal interpretation of Christianity. He suggests more than any one else an avatar of the spirit of Fichte after the Napoleonic wars. Although to many Eucken's ideals are a little vague, no one can read or listen to him without the conviction that he sees a real vision and is trying to describe it. Even his most ardent admirers, however, must wish that he could be a little more articulate and definite in stating philosophically just what he would have us do.

Judge Baker Foundation Case Studies. 40 Court St., Bost. 1922.

Rozumowanie Dzieci. Badania Eksperymentalne nad dziecmi od lat dziewieciu do dwunastu. By Dr. Marja L. Librachowa. Warsaw, 1922. 128 p.

Poziom Intelligencji. By Dr. J. Joteyko. Warsaw, 1922. 178 p.

The Book of Yahweh (The Yahwist Bible.) Fragments from the Primitive Document in Seven Early Books of the Old Testament. Arranged by CLARIMOND MANSFIELD. Bost., Cornhill Publishing Co., 1922. 260 p.

The compiler of this book has done a very valuable service in giving us this literature, book by book, in its present form. It ought to do good service in restoring to the religious consciousness a deeper appreciation of this fresh and original conception of the beginnings of our faith.

The God-Experience. By E. LEIGH MUDGE. Cincinnati, The Caxton Press, 1923. 88 p.

Psychology has long stressed sight and the other senses which objectify experience. We are now turning to deeper and more intimate senses (Crile and Cannon) and so forth. This little volume describes our third deeper more complex attitude toward God or whatever we conceive to be the fundamental reality of the universe. This is very deep-rooted and is more than cognitive; it is warm and vital. He gives considerable time to evidence of this in ancient literature, and here he finds a new basis of values and reforms.

Industrial Administration. London, Longmans, Green & Co., 1920. 202 p.

This volume consists of eight lectures by as many different authorities, the topics being: Social applications of industry to labor; applications of psychology to industry; education as a function of management; occupational diseases; atmospheric conditions and efficiency; industrial councils; training for factor administration; industrial fatigue. Each of these topics is treated comprehensively and by an authority. It would require a long review indeed to do justice to these very condensed treatments of these central questions, but this book should be in the hands of all interested in this great problem.

A Comparison of Tendencies in Secondary Education in England and the United States. By JAMES WILLIAM NORMAN. New York, Teachers College, Columbia University. 187 p.

U. S. A. considers the preparation for vocations as an essential ally of the social-civic objective. When given early, England does not consider it a necessary part of the humanistic cultural ideal, but is rather antagonistic to it. The aims of secondary education are ill defined in both countries as compared with Germany, where there is no such confusion and the school is the servant of the aristocratic state in peace and war. The problem of secondary education in a democracy, however, is far harder, and hence the lack of aim is worse

Adolescence and High School Problems. By RALPH W. PRINGLE. Boston, and New York, D. C. Heath & Co., 1922. 386 p.

This volume deals with those phases of this great subject which are all practically impossible for secondary teachers, and makes "no attempt at completeness." After a chapter on pre-adolescence, Part I, on its psychology, takes up physiological, mental, social and moral aspects. The rest of the book is devoted to high-school problems: the curriculum; social, literary activities; high-school journalism, athletics, pupil finance, sex and moral education. A three-page bibliography following on each chapter is appended.

Training for Effective Study. By FRANK THOMAS. Boston, Houghton Mifflin Co., 1922. 251 p.

This is a practical study for training-school pupils to organize their study procedure. It assigns great importance to the study period. The first

chapter treats of the meaning, importance and conditions of study, assumes that the teacher is too active and that types of examination are wrong. Chapter II is on knowing what is to be studied. Chapter III is on motive; Chapter IV on securing continued application; Chapters V and VI on effective methods; and the final chapter treats of the supervision of study. Each chapter, text book-wise, has questions for study with suggested references, and there is a two-page bibliography at the end.

Developing Mental Power. By G. M. STRATTON. Riverside Educational Monographs. Edited by Henry Suzzallo. Boston, Houghton Mifflin Co., 1922. 76 p.

This is an admirable little monograph, most of it reprinted from an *Atlantic Monthly* article, and discusses such topics as: Is the mind a gymnasium or a tool-chest, defects in the rival accounts, the interplay of mind and body, influence within intelligence, emotion and mental energy, organization of impulses and will, care of the emotions, instincts wild and tame, exercises for the will and establishing government in the mind.

A Jewish University in America. By LOUIS I. NEWMAN. New York, Bloch Publishing Company, 1923. 94 p.

An amplification of a previous article by the author to which now is appended a large number of opinions of prominent Americans concerning the desirability and feasibility of such an institution. This is of particular interest just now in connection with the development of the Jewish University in Jerusalem.

Bulletin of the National Research Council. Vol. V, Part 2, No. 27, Dec., 1922. Washington, The National Research Council of the National Academy of Sciences. 120 p.

This number is devoted to a description of the present status of visual science by L. T. Troland. He discusses the problem, historical perspective and fundamental concepts and methods of visual science, analysis of visual experience, its mechanism and salient problems of visual psychophysiology.

A Comparison of the Intelligence and Training of School Children in a Massachusetts Town. Harvard Monographs. By EDWIN A. SHAW and EDWARD A. LINCOLN. Cambridge, Graduate School of Education, Harvard University, 1922. 49 p.

Most previous surveys have dealt with schools of a large community rather than with those of smaller towns, which are included here. This is based on the results of testing Wayland and Cochituate schools.

Standard Educational Tests in the Elementary Training Schools of Missouri. Harvard Monographs. By WALTER F. DEARBORN, EDWARD A. LINCOLN and EDWIN A. SHAW. Cambridge, Graduate School of Education, Harvard University, 1922. 89 p.

This is a Carnegie test of the results of instruction in the elementary training schools of the state normal schools of Missouri. It brings out the fact that there are many inter-school differences, as well as inequalities in the same school and grade. Although there are many cases of regular progress, the ups and downs are altogether too frequent, due perhaps to the fact that progress has not been measured by the attendance of the same groups of pupils in successive years, although often grade position gives little indication of the character of the work or the attendance of the pupils.